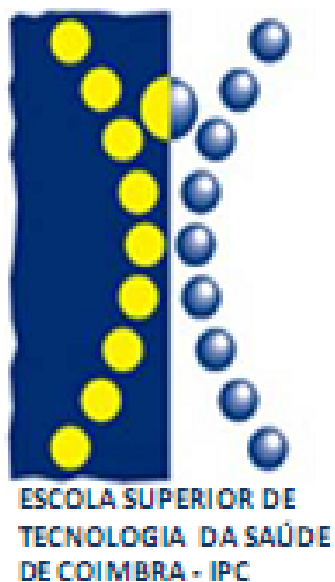


ESTeSC – Coimbra Health School

Abstract Book

Poster Week 4/15

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SCIENTIFIC COMITEE

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INDEX

Abstract number	Discipline	Course
A1 – A3	Infecção Hospitalar	Saúde Ambiental
A4 - A11	Gestão de Qualidade da Água	Saúde Ambiental
A12 - A22	Farmacoterapia II	Farmácia
A23 - A30	Imunohemoterapia Clínico-Laboratorial II	Ciências Biomédicas Laboratoriais
A31 – A39	Fisiologia I	Fisioterapia
A40 – A42	Epidemiologia	Saúde Ambiental
A43 – A45	Investigação	Vários
A46 – A53	Genética	Dietética e Nutrição
A54 – A59	Qualidade e Segurança Alimentar	Saúde Ambiental
A60 – A69	Teoria e Prática da Fisioterapia	Fisioterapia
A70 – A74	Electrocardiologia II	Fisiologia Clínica
A75 – A83	Microbiologia	Farmácia
A84 – A91	Anatomofisiologia I	Dietética e Nutrição
A92 – A99	Anatomofisiologia I	Farmácia
A100 – A118	Metodologias da Investigação	Farmácia

TITLE: BASIC PRECAUTIONS FOR INFECTION CONTROL

Authors: *Miriam Caldeira; Diana Barreira; Sandrina Maia; Gonçalo Oliveira*

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In the past, hospitals were considered unhealthy and restricted to the provision of care with a more humanitarian approach. The Infection Linked to Health Care (IACS) is an issue that is increasingly important in Portugal and worldwide.

The main objectives are to know the strategies developed at national level to prevent HAIs and strategies developed at national level for the implementation of the Infection Control Basic precautions.

The four main strategic lines of action and this support program - the organization; individual and organizational development; recording and monitoring; communication - seek to provide health units facilitating instruments improving the organization of services, care and measuring the results.

The methodology was based on the systematic review of scientific articles and other sources of information on the subject. We rely on Infection Prevalence Survey acquired in hospital and antimicrobial usage in hospitals from May 23 to June 8, 2012, as part of the study - European Centre for Disease Prevention and Control.

There was a high rate of antimicrobial resistance both in terms of MRSA, as Enterobacteria resistant to third-generation cephalosporins and Pseudomonas and Acinetobacter resistant to carbapenems.

The high rates of resistance to detected antimicrobial, point to a need for urgent intervention, so we conclude that there is a need to replenish the actions and implementation of Infection Control Committees and antibiotics Commissions and implement educational measures to improve the diagnosis of infection.

TITLE: HEALTH AND ENVIRONMENTAL POLLUTION IN HEALTH UNITS

Authors: *Carolina Moreira; Ana Azul; Lydiá Guerreiro*

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Hygiene and control of the environment play an important nature in preventing infections associated with health care. In turn, this environment has two distinct areas, but they are related to each other. Namely the lively atmosphere (patients, visitors) and the inanimate atmosphere (facilities, water).

Therefore should be developed techniques to make it healthier, such as hygiene measures; development of "clean zones" and "dirty areas"; use of personal protective equipment and practice proper management of waste. The cleaning techniques include cleaning and disinfection of all spaces and equipment present at the health units. They should be made cleaning plans, taking into account its periodicity, the techniques used and the chemicals employed. The preparation of clean and dirty circuits must be independent, avoiding cross-contamination if it achieves. In order to prevent certain dangers for the patient either to health professionals, it is necessary to use personal protective equipment. As for waste management, it is important to separate them and store them in order to reduce the proliferation of microorganisms responsible of certain infections that can occur in this type of environment.

With this work we will: enhance the prevention of iatrogenic infections; reflect on the general principals in understanding the problems associated with the environment and define measures for environmental monitoring.

TITLE: THE USE OF NAIL POLISH BY HEALTH PROFESSIONALS**AUTHORS:** *Ariana Nunes, Filipa Ferreira, Liliana Loureiro, Tatiana Neves***Affiliation:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The nail products contain toxic or potentially harmful ingredients, such as toluene, formaldehyde and dibutyl phthalate, which are known to the "triplet toxic". The use of such chemicals is of high concern for workers in the salon, since exposure to these chemicals may have negative impacts on our body, damaging the nervous system and hormones, and is also associated with other diseases such as fertility problems and cancer. As such, what we want is to analyze the various scientific papers related to this subject. Later we will provide a questionnaire for students and teachers respond, whose purpose involves assessing the knowledge of them faced with this theme. After comparing the results of this questionnaire, we intend to compare what the target population knows about this issue and understand what the respondents (teachers and students) and the courses are more knowledgeable about the surrounding risks to the use of nail polish by health professionals. At the end we intend to make a brief discussion regarding the use of varnish, whether or not advised, which risks to the patient and what the best practices to acquire to have nails in good hygiene.

TITLE: COIMBRA WATER AND CONSUMER SATISFACTION LEVEL

Authors: *Chloé Delassossais; Joana Ramos; Marisa Cordeiro*

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The essential role of water for human survival and development of societies is common knowledge today. At the same time, it is known that its availability in nature has been insufficient to meet the requirement required in many regions of the planet, a phenomenon which has worsened increasingly. In this scenario, the facilities for water supply must be able to provide water quality, regularly and in an accessible manner for the people.

This article aims to analyze various aspects related to the consumption of tap water covering the reliability and consumption by users of the county parishes of Coimbra.

The methodology was based on the elaboration of a questionnaire which was applied to a sample of people belonging to the county parishes of Coimbra and later analyzed statistically.

The expected results of this study tend initially to a large percentage of normal consumers of tap water of public supply, which was confirmed by results obtained.

In this study, the consumers not only trust the public water supply as most consumes regularly. The Coimbra's water is a reliable water and classified as one of the best, if not the best in the country.

TÍTULO: GOOD PRACTICES OF WATER MANAGEMENT

Authors: *Ana Oliveira; Maria Oliveira; Marta Sousa*

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According to the United Nations Organization, the current levels of consumption and waste of water, will have serious consequences. The water will be the leading cause of global conflicts. To prevent this happening, we must adopt measures that can be applied in our daily lives and will contribute to saving water.

The methodology of the work consisted in designing a questionnaire, with in order to evaluate the attitudes that people have with regard to good water management practices.

After the preparation of the questionnaire, we obtained 45 replies. The population has a habit to save water in daily life, but still there are attitudes which can combat the waste of water. The results were less positive, when washing the yard or garage, the population still continues to "sweep" the pavement with hose, before a proper cleaning, the percentage obtained was 57.1. It was noted that 77.6% does not use bucket or container for collecting water in the shower while you wait for the water to heat and that 40% take rainwater.

In short, when we talk about water wastage, we indicate a set of processes through which human beings spend to no avail. Therefore, waste water means lack of clarity about the importance for the survival of this valuable and limited natural resource. We must fight against the shortage of water, eliminating the waste.

In short, when it comes to wasting water, we are indicating a set of processes through which humans spend no avail. Therefore, waste water means lack of clarity about the importance to our survival of this valuable and limited natural resource. We must fight against water scarcity.

TITLE: REUSE/ RECYCLING OF WATER

Authors: *Ana Rita Tavares; Inês Amado; Inês Pedro; Inês Quatorze*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Nowadays the population is not aware of how essential water is. People do less and less reuse and increasingly an improper use of water. In the future there may be shortage of this precious resource, and now, we have to take some action in order to this situation do not aggravate.

After the research on the reuse / recycling of water in four different locations in the district of Coimbra, to forty interviewees, we found that most of the population doesn't know the percentage of water that is available on the planet for human consumption. Thirteen people said that we have between twenty four to seventy percent of water. Ten said they were between ten and twenty five percent. And twelve people said they were between two and nine percent. As we know, the one percent value is the closer to the reality and only four people said that this is the value.

Other issues on the daily activities were placed, and we found that there are some saving habits that people already acquire, such as brushing your teeth with closed tap and showering. However, there are still some gaps in the routines such as not reusing the water bath while we waiting for heating and not reuse the food washing water.

It is crucial to mentalize the community for recycling / reusing water so that future generations can use this resource in the best way.

TITLE: THERMAL WATERS

Authors: *Elsa Resende; Patricia Coelho; Tânia Batista*

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Thermal waters come from natural springs or artificially collected springs with a chemical composition and physicochemical properties beneficial to human health. Groundwater is particularly enriched in salts coming from rocks and sediments. For a long time, it was believed that these waters had a different source from groundwater, but nowadays it is known that both have the same origin: they are surface water infiltrated underground. Thermal waters reach greater depths, enriched in salts, and acquire new physico-chemical characteristics, such as more alkaline pH and a higher temperature. The European Union regulated the terms to be used on the labels of the bottles, but there is no European criteria to be applied to the natural waters for hydrotherapy. Today, the thermal springs spas are a healthy option to treat several medical conditions, since they are extremely functional, promote the well-being, rehab and therapy of clients.

This work wants to assess the knowledge of the population about the quality of thermal waters, their composition and identify their benefits for public health. To do this, we will apply a questionnaire to the population.

TITLE: THE WATER ON THE PLANET

Authors: *Samuel Gutbub Santos; Patricia Simões*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal*

This article aims to address the shortage of water on the planet. Mentions the difficulties that some regions of the planet have due to the scarcity of water and the solutions found to the crosse. This work demonstrates that the problem of water is present in everyone and that problems usually differ from zone to zone and the solutions, too, are different.

The analysis of several articles and news on the subject.

One of the references was the Sands with rest of oil in Canada, which was resolved by a girl of eighteen, which decreases more than 200 years the time of removing some oil pollutants, using plants that nourish this chemical. Also, was approached the example of Qatar and Dubai who have different water collection systems of other countries, such as Portugal. Is based on water desalination by reverse osmosis.

The results show the response to our goals, therefore, the data reveal that there are several problems with the world's water, however, also, there are several solutions and technological advances each time there will be more alternatives.

Title: WATERBORNE DISEASES

Authors: *Catarina Mendes; Jéssica Saramago, Pedro Simões*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal*

The water, being a finite and vulnerable resource, can represent an obstacle to socio-economic development of a country and to an individual's quality of life.

Thus, among the challenges to be faced by future generations and threaten the future of humanity, are the availability of water for human consumption and food production.

The population growth in the world, the need for larger amounts of water, by both industry for agricultural irrigation, requires new demands on available water supplies. However, the sources of fresh water used by humans suffer a continuous and growing process of degradation due to sewage dumping in the nature of animal feces (wild and production), in addition to waste from industrial activities. Thus, waterborne diseases, particularly those caused by intestinal protozoa, emerged as a major public health problems in the last 25 years.

That said, the goal of our work, as well as to report on the types of source and waterborne diseases that exist is also study and realize to what extent the ESTeSC students have enough knowledge on this issue. To make it possible to evaluate students knowledge, we produce a questionnaire where we receive 91 answers, where we can conclude that students are moderately informed on the subject.

In sum, we must raise awareness among students so that there is as much knowledge as possible on the subject of increasing concern.

TITLE: WATER FOOTPRINT OF THE SENIOR POPULATION

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The Water is an essential commodity and a necessity essential to the health and survival of humanity, and it is considered one of the basic rights. Of all the water available only 3% is fresh water, 3 of these only 0.02% is available in rivers and lakes in the form of fresh water consumption. The water footprint is an indicator that expresses the water consumption involved in the production of goods and services we consume.

This study aimed to evaluate the Water Footprint of the Senior population and compare with the Water Footprint of results ESTeSC the academic community obtained in the year 2014 and suggest ways to implement good practices in water use.

For this work was used as a survey methodology applied in similar studies and a review of scientific articles published on the topic.

Acquired in total 114 responses, we observed a decrease of 3.5% of respondents that do not close the tap while Soap, we found also that 70.2% (14.94% more than in the student community of 2014) take 5 to 10 minutes to take a shower. We found also that 84.2% of patients do not have low flow taps and 84.2% makes the car wash with hose, and the use of rainwater is made by only 14% (plus 1.8% when compared with data from 2014).

With this we can conclude that in general with increasing age the senior population has less perception of water availability. So with this work could be greater awareness of the senior population to the importance of water, alerting them to the need to implement management measures for this resource that is fundamental to life.

TITLE: WATER FOOTPRINT OF STUDENTS OF THE INSTITUTE POLYTECHNIC OF COIMBRA

Authors: Beatriz Rocha; Carolina Nunes; Francisco Ferrão

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The water is an essential resource for the existence of life. Although it is considered a renewable resource the truth is that its distribution around the world is very unequal, being more abundant in some areas and sparse in others. The Water Footprint is an indicator of water use that considers not only its direct use by a consumer or producer, but also its indirect use.

This work we intend to evaluate the Water Footprint of students in the Institute Polytechnic of Coimbra, considering the water for domestic use (inside and outside their home), and also making a comparison with the results obtained in the previous year, by applying the same questionnaire. This research we use as methodology the questionnaire validated to evaluate the Water Footprint and a review of articles already published. As study results, we obtained, in 114 responses, an increase of 7.9% of individuals who do not close the tap while soap in the shower and realized that 41.2% (4.4% more than the previous year) take more than 10 minutes to take shower. We also found that 54.4% of respondents do not have low-flow taps and 72.8% makes the car wash with the hose instead of the bucket. The use of rainwater is made by only 18.4%, which reveal a huge waste of water.

These results we can conclude that it is necessary to raise awareness in order to change small habits to promote a sustainable use of water. However, there is a significant improvement over the previous year.

TITLE: ANTIPSYCHOTIC PRESCRIPTION IN PEDIATRICS**Authors:** *Cátia Martins, Rúben Santos, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

The Central Nervous System (CNS) is constituted by organs that control and coordinate all the activity in the human body. The pharmacological advances allow nowadays an effective, and sometimes selective, intervention in situations derived from functional disorders of the CNS.

The Antipsychotics or Neuroleptics are used to control agitation, aggressiveness, delusions and hallucinations. There are “typical” Antipsychotics (for example Haloperidol) and “atypical” Antipsychotics, these are the more recent and used ones (for example, Risperidona).

The Antipsychotics have been misused in child with psychotic disorders, autism and/or mental retardation, most of the times without taking into consideration the neurotoxicity effects on those patients. Moreover, their use in depressive cases with psychotic symptoms, in adolescents that not answer to the isolated use of antidepressives, have been common.

For example, Haloperidol has been the most indicate for the use in pediatric ages, in doses of 0,25-6mg/day, and Pimozide, the most prescribed for movement disorders in childhood in doses of 1-6mg/day.

The assays performed were conducted mainly in adults, which mean that there are not cohesive data about the use and repercussions for these drugs in pediatrics. However the prescription of Antipsychotic in infants has increased significantly.

It is the child psychiatrist concerns the decision of evaluate the security and efficiency, and adequate the use of Antipsychotic, in one of the most vulnerable and susceptible groups

TITLE: BREASTFEEDING AND THE USE OF ANTIDEPRESSANTS TRICYCLIC

Authors: *Joana Feiteira, Micaela Morais, Sara Santos, Jorge Balteiro*

Affiliations: *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Antidepressants are widely used not only as therapeutic drugs of various forms of depression, but also to control chronic pain, anxiety, enuresis, bulimia, and symptoms of smoking cessation syndrome.

Tricyclic antidepressants (TCAs) are effective for treating moderate /severe depression, anxiety and neuropathic pain disorders, and although prescribed for a long time, recent clinical data indicate the increased use of selective inhibitors of serotonin reuptake (SSRIs) during breastfeeding.

Most TCAs have a higher toxicity index and there is no significant difference in the clinical efficacy of TCAs and SSRIs for the treatment of depression.

The use of psychotropic drugs during breastfeeding remains a controversial issue due to the fact that many antidepressants that women in breastfeeding process use are excreted in breast milk, making the infant's exposure risk real, although not necessarily harm it.

Although advocated continued breastfeeding during treatment, there are drugs in this category that are not fully recommended.

Whenever possible should be replace drugs which present a risk to the infant a similar safer. Antidepressants considered as safer while breastfeeding are sertraline and paroxetine. Treatment with fluoxetine and citalopram is contraindicated, since there is evidence of significant serum concentrations in breast-fed infants.

The real possibility of combining antidepressant treatment with breastfeeding exist, through a therapeutic choice based on individual patient needs.

TITLE: DIABETIC FOOT: TREATMENT**Authors:** *João Marques, Mariana Barata, Miguel Diogo, Sandra Gonçalves, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Infections and problems in the circulation in the lower limbs are directly associated with poorly controlled diabetes. Usually, the diabetic only aware of this problem when it is at an advanced stage, which makes it extremely difficult to treat due to circulatory failure. This is the diabetic foot. Problems in the foot are numerous, including: peripheral neuropathy (nerve degeneration), ulcers, infections, ischemia or thrombosis.

Its prevention is to maintain the blood glucose levels controlled, daily examination of view of the feet and periodic medical assessment. If there is bad practice of diabetic foot treatment there is a risk of this being amputated.

The approach when it comes to treatment should be specialized and conducted by a doctor trained in this particular case, following certain rules such as: education, risk qualification, research, appropriate wound management, specialized surgery, aiming to prevent/treat the disease in question.

Information and early intervention are considered the key points for a guaranteed change regarding to the prevention of this complex pathology.

TITLE: DRUG EFFECTS ON THE FETUS FROM THE USE OF MISOPROSTOL**Authors:** *Ana Rodrigues; Andreia Leite, Márcia Bastos, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Pregnant women are considered a special group regarding taking medications. Drugs pass into the bloodstream when get absorbed and, therefore, into the placental barrier, reaching the defenceless fetus, unprepared to receive those substances. Many drugs reach the fetus in high concentrations, risking changing the formation of organs and tissues – fetal malformations.

During pregnancy, particularly during the first phase, the use of drugs is dangerous becoming indispensable to evaluate the risk/benefit of the pharmacological treatment and to adopt a preventive medicine.

The exhibition by Misoprostol no first quarter is associated with hum increased risk of congenital malformations.

Infarmed I.P. warns of the risk using Misoprostol in women of childbearing age, advising the non-use during pregnancy and referring to be of utmost importance to inform women of the appropriate concentration on treatments using this drug. If suspected pregnancy, the use of the drug should be discontinued.

TITLE: HYPERTENSION IN PREGNANCY

Authors: *Alexandra Roxo, Dina Mendes, Jéssica Carvalho, Laetitia Barroca, Jorge Balteiro*

Affiliations: *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

According to several studies, gestational hypertension is one of the complications that most affect pregnant, having a high relevance in high-risk pregnancy.

Through various research, concluded that the gestational hypertension, even with the evolution of science, still has a high mortality rate for pregnant and her baby, due to the complications and lack of awareness of the risks of women during pregnancy-childbirth.

Gestational hypertension is characterized by the result of increased blood pressure, presence or absence of proteinuria, edema, vasoconstriction and, therefore, an increase in vascular resistance, and other symptoms of this pathology.

In this context there are many risks associated with this pathology, creating from them a lot of complications and the most common are the pre-eclampsia, HELLP syndrome, premature separation of the normally inserted placenta (PSNIP) and intrauterine growth restricted (IUGR).

Treatment should be the main objective of reducing maternal morbidity and mortality, and should take the blood pressure values to normal limits without causing harm to the mother and fetus.

TITLE: POLYMEDICATION IN THE ELDERLY**Authors:** *Beatriz Garrote, Liliana Valente, Mariana Nobre, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

In recent decades, the human population has been increasingly aging, as a result the number of people aged over 65 has increased considerably.

Aging is a biological, natural, solid, individual and irreversible process of gradual reduction in the functional reserve of the individuals, which means the organs and their functions are compromised, leading to changes in pharmacokinetic and pharmacodynamic levels. This has led to the appearance of diverse pathologies related with age and increased prevalence of chronic diseases arising thereby Polymedication.

The Polymedication can be defined in multiple ways, one of them is as the chronic and simultaneous use of pharmaceuticals for different diseases and symptoms, by the same individual. The practice of simultaneous use of drugs entails a number of consequences for the individual's health, ranging from drug interactions to the increased costs in health. In addition, there are several factors that increase the prevalence of Polymedication in the elderly, such as age, number of diseases, among others.

The effectiveness of therapy is directly related to compliance with the dosage, which in turn encompasses the adherence to therapy. Adherence to therapy is inversely related to Polymedication, that is, the higher the number of requirements, the lower the adherence. In conclusion, it is up to the health professional instill the rational use of medication, adopting strategies to minimize the problem and increase literacy on health in the elderly.

TITLE: POSTPARTUM DEPRESSION**Authors:** *Filipa Carvalho, Maria Coelho, Sandrina Santos, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Depression is one of the most common forms of mental disorder in the population and is becoming a major public health problem, particularly postpartum depression (PPD) that although frequent, is underdiagnosed. The severity can range from mild to severe symptoms, and there are three types of mood disorder in the postpartum period: Motherhood melancholy, postpartum depression and postpartum psychosis.

The PPD emerges as a rule, in the second or third month postpartum, with a minimum of two weeks during which there is depressed mood or loss of interest or pleasure in almost all activities, causing a significant impairment in social, occupational or other important areas of functioning.

This type of disturbance involves several psychosocial, obstetric, gynecological and biological variables. Among the risk factors are, as example, a history of depression, low self-esteem, disruption in the child's sleep, unwanted pregnancy, among others.

Although admittedly there may be various consequences on child development, it should be noted that the child is not only at risk when exposed to a medication but also a maternal depression untreated. The treatment involves three stages: acute, continuation and maintenance, based not only in psychotherapy sessions as well as the admission of psychotropic medications and hormonal treatment, and must adapt therapy taking into account the specificity of each situation.

TITLE: TETRACYCLINES IN PREGNANT**Authors:** *Mariana Cera, Rita Cunha, Sylvie Pina, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

The fact that antibiotics pass through the placenta, leads us to reflect on the criteria for the administration of these drugs in obstetric practice. Thus, the choice of antibiotic used should take into account the safety for the developing fetus.

The professional clinical pharmacy and should be fully aware that the drug will be administered to act in two different organizations: the mother and the fetus. During pregnancy there are physiological changes in women who contribute to the changes in absorption, distribution and elimination of antibiotics during pregnancy. The risk to health and fetal development by use of tetracyclines exists, due to their low molecular weight facilitates diffusion through the placenta, exposing the fetus to the possible toxic effects of these drugs.

Tetracyclines are broad-spectrum antibiotics action. Can cause fetal harm when administered to a pregnant woman may reach significant levels to the fetus, and the plasma concentration in the umbilical cord 60 % and 20% in the amniotic fluid circulating levels of the mother. The use of tetracycline during pregnancy can result in permanent coloring of teeth of the fetus and influences the growth rate of the fibula. Tetracyclines should not be used during tooth development, except in cases where the expected benefits of therapy outweigh the potential risks.

For these reasons, allies still the classification of tetracyclines in category D, it is up to medical and health professionals in general carry out a rigorous assessment of the risk that a pregnant woman is exposed when using this class of drugs during pregnancy.

TITLE: TREATMENT OF GESTATIONAL DIABETES**Authors:** *Marco Silva, Sara Abrantes, Sónia Lopes, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Gestational diabetes (DG) is one of the medical complications more frequent in pregnancy. DG is characterized by glucose intolerance identified throughout the pregnancy and that usually return to normal tolerance after the delivery. Maternal age, marked obesity, belongs to some ethnic groups and family histories of diabetes are identified as principal risk factors that predispose to DG.

The prevalence of DG in Portugal has been increasing over the years, this is due to social and demographic change in the resident population. A pregnant should maintain a good level of glucose in order to prevent and minimize fetal and neonatal complications, the essential diagnosis.

Treatment of DG goes through two key points that should be complemented each other: pharmacological and non-pharmacological treatment.

First to proceed to an appropriate dietary guidance, followed by physical activity and monitoring of blood glucose levels. When the non-pharmacological treatment is not sufficient to control blood glucose must resort to the administration of exogenous insulin, insulin therapy. The insulin therapy should be based on the individual profile of the patient, since some patients only need insulin to prevent hyperglycemia and others for the postprandial period.

In last times, due to discomfort administration and care for storage, some studies have pointed to a possible use of oral antidiabetics, such as glibenclamide and metformin.

TITLE: URINARY INFECTIONS IN PREGNANT WOMEN**Authors:** *Alexandra Dias, Vanessa Vergas, Vânia Silva, Jorge Balteiro***Affiliations:** *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Urinary infections are more prevalent in women because of the short distance between the urethra and the anal orifice. Usually they are not serious in not pregnant women, but when they occur in pregnancy, urinary infection can arise as a serious complication and can cause maternal and perinatal mortality.

The anatomic and physiologic changes that urinary tract suffers during the pregnancy facilitate the development of urinary tract infections. During pregnancy all urinary infections should be seen as complicated, ranking as asymptomatic or symptomatic. While asymptomatic infections are defined by the presence of a bacterium in the absence of any symptoms, the symptomatic infections are defined by the lower urinary tract infections. The infection is caused by a pathogen, the most common is *Escherichia coli*.

After the diagnosis is important be applied the therapy, where in the antimicrobial agent used should ensure the safety of the mother and the fetus.

There is a growing concern among health care workers responsible for women in pregnancy period, during this period a small number of therapeutic options and preventive measures in view of the toxicity of certain drugs.

TITLE: REYE'S SYNDROME

Authors: *Cláudia Vieira, Maria da Luz Alves, Telma Marques, Jorge Balteiro*

Affiliations: *Pharmacy Department, Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra (IPC), Coimbra, Portugal.*

Reye's syndrome is a biphasic disease that occurs mainly in childhood, represents a deep abrupt failure of mitochondria manifesting as non-inflammatory encephalopathy acute associated to evidence of liver dysfunction and infiltration of fat in the viscera. Disease of uncertain cause however is thought to be associated with acetylsalicylic acid intake in clinical cases of viral infections.

There is a strong association between the intake of the acid and the demonstration of the syndrome, however it's important to point out the possibility of develop Reye's syndrome without taking acetylsalicylic acid.

Presents as symptoms: persistent vomiting and continuous, nausea, drowsiness, personality change, irritability, breathing difficulty, disorientation, fainting, delirium, convulsions and liver failure.

There is no specific treatment for Reye's syndrome and the existing ones only serve to alleviate symptoms. The goal of the treatments is reduce brain inflammation to avoid irreversible damage, reverse metabolic damage and prevent complications at the level of lungs and liver.

TITLE: Algorithm Laboratory Diagnosis for Hepatitis C Virus**Authors: André Grácio, Carina Vieira, Cláudia Silva, Dora Morgado, Fernando Mendes****Affiliations:** *Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Department Biomedical Laboratory Sciences, Coimbra, Portugal*

Hepatitis C is a viral infection of the liver, caused by the hepatitis C virus (HCV), being transmitted parenteral, percutaneous or permucosal via.

The incubation period for HCV ranges from 2 weeks to 6 weeks. After infection, approximately 60-70% of the infected will not develop any symptoms. When present symptoms usually are fever, fatigue, anorexia and abdominal pain. HCV is considered a silent epidemic, 85% of the cases evolves to chronicity, evolving to cirrhosis and consequently hepatocellular carcinoma, which may need a hepatic transplant or can lead to death.

HCV belongs to *Flaviviridae* family, *Flavivirus* genus. It is a complete virion with envelope, RNA ss (+) and capsid. In 1975, HCV was described as non A, non B. Later, Choo *et al*, identified the pathology as Hepatitis C, named by the virus HCV.

Nowadays, there is still no prophylaxis, only treatment, the more communally used was interferon alpha combined with Ribavirin, unfortunately with bad results on HCV genotypes 1a and 1b, recently a new treatment was approved which acts on the enzyme NS3 serine protease, with positive results, especially on the above mentioned genotypes.

The primary diagnosis is the screening of anti-HCV antibodies (Ab), by EIA (Immuno-enzimatic Assays). As complementary tests, the biomedical laboratory scientists can perform, confirmatory tests as Recombinant Immuno Blot Assay (RIBA) and for genome detection the Nuclear Acid Tests (NAT) is very useful especially in Transfusion Medicine. For viral load the more common test is the Polymerase Chain Reaction Real Time (RT-PCR).

Hybridization tests as the Line Probe Assay (LIPA) or the Restriction Fragment Length Polymorphism (RFLP) tests, can be used for genotype identification.

TITLE: Algorithm for Laboratory Diagnosis for Hepatitis B and D**Authors: Ana Ribeiro, Ana Martinho, Diana Lopes, Jessica Ferreira, Fernando Mendes****Affiliations:** *Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Department Biomedical Laboratory Sciences, Coimbra, Portugal*

Hepatitis B is an infectious disease of the liver caused by the hepatitis B virus (HBV). The virus is comprised of a double-stranded circular DNA, partially incomplete with positive polarity, capsid and an envelope. Hepatitis B may progress to acute hepatitis B or chronic. After contact with the HBV, the acute phase of the disease may be symptomatic or asymptomatic.

This has two possible phase changes, the elimination of HBV or its prolongation in the body. After the presence of active virus in the body for more six months, begins the chronic phase. There are two types of transmission of these infectious disease: by percutaneous or permucosal route. For the laboratory diagnosis we can use six serological markers (antigens of the virus and antibodies against HBV), as well the amplification of viral DNA by Polymerase Chain Reaction (PCR).

The best way to prevent hepatitis B is vaccination, avoid risky behavior and submit to the administration of hepatitis B immunoglobulin (HBIG) in case of direct exposure to the virus.

Another infectious disease that can arise is hepatitis D. This hepatitis virus has a spherical form so its genome consists in circular RNA only with one-chain. This virus single can only replicate with the presence of HBV. The transmission mode is equal in both hepatitis and the prevention of this hepatitis can be achieved by hepatitis B vaccine. There is no treatment for this infectious disease therefore in case of HDV infection patients should follow the treatment of hepatitis B.

TITLE: Algorithm for Laboratory Diagnosis of Syphilis, Malaria and Bacterial Contamination

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Malaria is a disease caused by a protozoan a Plasmodium. The transmission occurs after female mosquito bite, Anopheles gambiae complex, infected with contaminated blood. It occurs mostly in poor, tropical and subtropical areas of the world. On human body the parasites multiply in the liver, then infect red blood cells (RBC). There are four species of parasites: Plasmodium vivax, Plasmodium ovale, Plasmodium falciparum and Plasmodium malariae.

The main groups at risk are children, pregnant women, travelers and emigrants. The clinical diagnosis is based by patient symptoms, routine tests as well as the observation of blood smear stained with May-Grünwald-Giemsa. There are some available test kits to detect antigens derived from malaria parasite, which offers a useful alternative to microscopy in situations where reliable microscopic diagnosis is not available.

Serology detects antibodies against malaria parasites, using either indirect immunofluorescence (IFA) or enzyme-linked immunosorbent assay (ELISA). We can use also molecular biology techniques for confirmation of parasite species.

Syphilis is a disease caused by bacteria Treponema pallidum, sexually transmitted, from mother to fetus and through blood transfusion. The bacteria comes into the body through mucosal surfaces, to further spread into the entire body. It is classified in primary, secondary, latent and late stage the diagnosis made by research bacteria on sores skin, serologic tests: Venereal Disease Research Laboratories (VDRL) and the detection of Anti-Treponema pallidum by immunofluorescence antibodies (FTA-Abs).

The bacterial contamination usually is associated to bad phlebotomy method. If not being able to eliminate bacterial agents, with precaution these should be minimized with good laboratorial practices.

TITLE: *Algorithm for the Laboratory Diagnosis of Hepatitis A and E***Authors: *Alessia Teixeira, Cristiana Costa, Diana Serra, Joana André, Fernando Mendes*****Affiliations:** Polytechnic Institute of Coimbra, Coimbra Health School, Department of Biomedical Laboratory Sciences, Coimbra, Portugal

Hepatitis is an inflammation of the liver and can have several causes such as alcohol, drugs, virus among others. Hepatitis A and E are caused by Hepatitis A virus (HAV) and Hepatitis E virus (HEV) respectively, which are naked virus, with capsid. They are acute inflammations that heal spontaneously and the individual remains immune for the rest of his life in hepatitis A, meanwhile HEV can infect developed several times, meaning that no life long immunity arises. Both hepatitis never evolve to chronic infection.

The transmission occurs by oral-fecal way or by blood exposure. The incubation period for hepatitis A is, approximately, of 15-50 days after infection, while in hepatitis E is 15-60 days.

Jaundice, dark urine and fever are some of the symptoms and can be prevented by improving hygiene conditions. Vaccination and the administration of prophylactic immunoglobulins are only used on hepatitis A.

There is no specific treatment for both hepatitis. The disease usually endures from 2 to 6 months. The diagnosis is made by Enzyme-Linked Immunosorbent Assay (ELISA) for antibodies detection and Polymerase Chain Reaction (PCR) for viral load. The ELISA test is based on the detection of anti-HAV and anti-HEV antibodies, detected on serum. Although the screening of HAV and HEV isn't mandatory, it is important in case of liver transplantation. The serologic markers of hepatitis A can be IgM or IgG. The HAV-IgM is present at the acute phase and IgG representing immunization. On the other hand, on hepatitis E there are markers such as IgM and anti-HEV for the acute phase and IgG and anti-HEV for the cure. There is an elevated prevalence of this disease in developing countries.

TITLE: *Algorithm Laboratory Diagnosis for Herpes Simplex, Cytomegalovirus and Epstein - Barr virus***Authors: *Mariana Silva; Neuza Oliveira; Rafaela Machado; Tatiana Varandas, Fernando Mendes*****Affiliations:** Polytechnic Institute of Coimbra, Coimbra Health School, Department of Biomedical Laboratory Sciences, Coimbra, Portugal

The herpesviruses are a family which includes over 100 species, including herpes simplex (HSV1 and 2), Cytomegalovirus (CMV) and Epstein Barr virus (EBV). The herpes virus has the structure of a virion, spherical, with a genome, capsid and envelope, and the virus replication occurs in the nucleus. It occurs a primary infection, latent in the host either on a nervous system nodes (HSV 1 & 2) or leukocyte level (CMV and EBV), reactivation of these viruses can happen under stress, fever, bacterial infections, UV radiation or immunosuppression. Contamination by HSV 1 and 2 occurs before age 5 and during adolescence, which can be transmitted by saliva, genital secretions and vesicular fluid, respectively. Contact with affected zones facilitates the transmission leading to facial, genital, eye, skin manifestations and encephalitis. 90% of the population shows antibodies against HSV-1 and 22% against HSV-2. The treatment can be done with nucleoside analogs. The laboratory diagnosis is based in the detection of antibodies (Ab), viral antigens, viral genome, virus culture and electron microscopy. CMV can be transmitted through sexual contact, body fluids, transfusion and transplantation, intrauterine and perinatal. Developing countries have a prevalence of 90% which 70% are adults. The treatment is similar to HSV. The EBV can be transmitted by oral secretions, transplant and sharing contaminated personal items. About 90% of adults are infected, and there is a correlation with the infectious mononucleosis, myeloproliferative diseases and gastric and breast carcinoma; however there is still no effective antiviral therapy. The laboratory diagnosis of CMV and EBV is similar to HSV.

TITLE: Algorithm Laboratory Diagnosis for HIV-1 and HIV-2**Authors: Ana Lúcia Santos, Andreia Almeida, Cristina Alves, Fernando Mendes****Affiliations:** Polytechnic Institute of Coimbra, Coimbra Health School, Department of Biomedical Laboratory Sciences, Coimbra, Portugal

The Acquired Immunodeficiency Syndrome (AIDS) is caused through advanced stage of Human Immunodeficiency Virus (HIV) infection. HIV prevalence is increasing worldwide since people on antiretroviral therapy (ART) are living longer, although new infections decreased 38% since 2001, still about of 35 million people are infected by HIV.

HIV can be transmitted via the exchange of a variety of body fluids (breast milk, blood and genital secretions) from infected persons.

The risk factors are behaviors and circumstances that put individuals at greater risk of contracting HIV include: practice unprotected sex, having another sexually transmitted infection (STI), sharing injecting equipment and drug solutions (or experiencing accidental needle stick injuries); receiving unsafe injections, blood transfusions, medical procedures or piercing. The prevention is based by limiting exposure to these threats.

HIV doesn't have a cure, but can be suppressed by ART combination that will help to control viral replication and allows an individual's immune system to strengthen.

HIV isolates are currently grouped into two types: HIV-type 1 (HIV-1) and HIV-type 2 (HIV-2). HIV is a genetically related member of the *Lentivirus* genus member of *Retroviridae* family.

The original HIV laboratory diagnostic testing algorithm (LDTA) was developed in 1989, then in 2010 the Centers for Disease Control and Prevention (CDC) and the Association of Public Health Laboratories (APHL) proposed a new LDTA that excluded western blot.

Technologic advances in HIV laboratory testing continue to aid in screening, diagnosis, and patient management (disease progression and viral resistance to therapy).

TITLE: Algorithm Laboratory Diagnosis of West Nile virus and *Human Parvovirus B19*

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The West Nile Virus (WNV) is a member of the Flaviviridae family and mostly transmitted to humans by mosquitoes. The WNV is most found in Africa, Europe, Middle East, North America and West Asia. However it can be transmitted in blood transfusions, organs transplants, exposure in a laboratory setting and pregnancy.

Most people don't develop any symptoms although the ones who do, present symptoms like fever, headache, body aches, joint pains, tiredness, vomiting, diarrhoea, rash and swollen lymph glands. A small portion expresses severe symptoms in the neurologic system, causing encephalitis or meningitis, the most severe form of the infection.

The diagnosis consists in the antibodies detection and viral detection by reverse transcription polymerase chain reaction.

The Parvovirus B19 (B19) was discovered in 1974 and is a single-stranded DNA virus and the only member of the family Parvoviridae known to be pathogenic in humans.

*The manifestations of the infection vary with the immunologic and hematologic status of the host. In healthy immunocompetent individuals B19 causes *infectiosum erythema* and, particularly in adults, acute symmetric polyarthropathy. An infection in individuals with an underlying haemolytic disorder causes transient aplastic crisis. In immunocompromised hosts persistent infection is manifested as aplasia of the red blood cells and chronic anaemia. The *Parvovirus B19* human infection may cause fetal death in uterus, hydrops *fetalis* or development of congenital anaemia in fetus due to the fact the immune system is not fully developed.*

The diagnosis consists on antibodies detection or viral DNA detection. The persistent infections can be treated with immunoglobulin which aim to reduce the viral load.

TITLE: The Impact of Molecular Biology in Transfusion Medicine

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The safety of blood transfusion ambitions is to contribute security blood transfusions without transmissible infectious agents or minimizing at maximum the risk of transmission of infectious agents.

This agents were routinely screening in blood are Hepatitis B virus (HBV), Hepatitis C virus (HCV), Human Immunodeficiency virus (HIV), Human T Lymphotropic virus (HTLV) and Syphilis agent (*Treponema pallidum*).

For this it holds the immune serological screening and analytical molecular biology.

The nucleic acid amplification tests (NAT) is capable of amplifying nucleic acid sequences from the genome of an organism or virus, which is the main advantage test since amplify the DNA virus which causes infection, decreasing the window period (time from the initial stage of infection to the immune response), if one unit of blood collected during the window period will be infectious if HIV, HCV or HBV virion are present in the transfused component. At this stage, it is possible to detect the presence of antibodies by standard serological testing and using molecular biology tests. These tests become the practice routine in a safer blood donation with highest quality, since techniques are complementary.

Therefore, molecular biology is very important in transfusion medicine, in addition to detecting the presence of viral DNA in the blood sample can also quantify viral load, amplifying the genome of the infectious agent. Also very relevant for sequencing the genome and identifying possible mutations.

These contributions of molecular biology, contribute also to choose the most appropriate treatment depending on the type of virus, viral load, mutations as well as treatment monitoring.

TITLE: DEMYELINATING DISEASES

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Myelin is a lipid substance that results from the extension of the Schwann cells and its function is to protect and electrically isolate the axons of each other.

A demyelinating disease is a disease of the nervous system, central and peripheral, in which myelin sheath of the neurons is damaged by inflammation. So, this will impair driving signals in the affected nerves, causing deficits in sensation, movement, cognition and other functions depending on the injured nerves. These diseases can be hereditary, metabolic, immune-mediated and can often occur after viral diseases, since antibodies attack the myelin sheath.

Examples of this pathology are multiple sclerosis, transverse myelitis, Devic Disease, optic neuritis and others. The most common disease is the multiple sclerosis although unknown cause, may imply a self-immune response to a viral infection. It induces localized brain injuries and spinal cord demyelination: the myelin sheath becomes hard sclerotic, causing a degradation of the transmission of action potentials. Symptomatic periods are separated by periods of apparent remission. However in each recurrence many neurons are permanently damaged, so that the progressive symptoms of the disease are exaggerated reflexes, tremor, nystagmus (rhythmic oscillation of the eyes) and speech defects.

Due to neurological damage that these diseases cause there is still no cure, but rather ways to alleviate specific symptoms improving functionality and facilitating the daily activities of the person, for example using the neurofunctional physiotherapy through psychomotor exercises.

Keywords: Schwann cells, central and peripheral nervous system, myelin sheath, neurons, multiple sclerosis, neurological damage, functionality, neurofunctional physiotherapy.

TITLE: CHRONIC PAIN

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Pain is universal as it is known by all human beings, except for people with congenital insensitivity. Although the pain is seen negatively, it displays a key role in our life because it alerts us when our body is not in the best conditions leading us to search the required healthcare for the problem, this is the difference between chronic and acute pain. Pain becomes chronic when it lasts from three or six months to several years, manifesting continuously and without a cause. It causes suffering, limits activities of daily living and increases disability. Chronic pain induce headache, back pain, arthritis pain, psychogenic pain (pain not due to an earlier disease or injury or any visible sign of damage in the nervous system). Pain perception is based on diverse mechanisms (transduction, transmission and modulation) which are going to be explored in our poster.

Chronic pain does not have a cure, however, there are treatments to attenuate it. According to some studies, the lower the endorphin levels are in a person, the higher is the tendency to have chronic pain. There is the treatment through opioid analgesics, such as morphine, targeting the neuronal opioid receptors. These receptors produce responses of insensability to pain, once they are activated by the inhibitory neurotransmitters, they block the transmtion of painful signals to the NS (the endorphines). A future project from the pharmacology department is to create more medication, which contain this type of "drugs" that help to control the pain.

TITLE: MUSCLE ADAPTATIONS TO PHYSICAL EXERCISE

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The muscle tissue, constituted by muscle fibers and responsible for body movement, passes by adaptations, consequence of exercise.

Muscular muscle fibers are divided in two types, I (red or slow) and II (fast or white). Type I fibers are rich in myoglobin and mitochondria that gives them an oxidative character, they are highly vascularized and mainly requested on aerobic exercises (a long term activity with moderate intensity). Type II fibers have a smaller amount of myoglobin and a larger diameter, they are divided into oxidative and glycolytic, and more requested on anaerobic exercises (an intense and short term activity). However the two types of exercise request both type of fibers.

There are two kinds of muscle contraction, isometric (the muscle length doesn't change) and isotonic (can be concentric or eccentric where the length decreases and increases respectively). As a result of an excessive muscle contraction occurs hypertrophy (increases the size, number of fibers, strength and resistance). If the muscle isn't exercised for a long time it atrophies (decreases its size).

After the effort made metabolism creates mechanisms of homeostasis: the chronic and acute adaptations. Chronic adaptations are the hypertrophy of the muscle, the increase of vascularization, vein caliber, concentration of intramuscular and liver glycogen, basal metabolism, retention of water and intramuscular amino acids, resistance to lactate and a bigger ATP synthesis. Guarantees a better bone density and strengthening. The acute adaptations are the increase of sweating and heart rate, a raise of blood pumping and intramuscular vasodilatation caused by vasoconstriction of the muscle contractions.

TITLE: MYOKINES-HORMONAL FUNCTION OF THE MUSCLE

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In the past years, it has been invested on the idea that exercise has a profound effect on the immune system, because it may create anti-inflammatory effects. With an important role in protecting against physical inactivity appears the myokines. They have the ability to decrease the levels of inflammation and act as immune regulators, preventing the development of diseases.

A sedentary lifestyle can be the cause of various diseases such as obesity, cardiovascular diseases, cancer, type 2 diabetes, among others, because sedentary behavior does not produce stimulus to release myokines and thus there is no protective effect.

It is suggested that the term myokines refers to secreted proteins from skeletal muscle cells. They are related with the contraction of muscles and also with physical activity. The skeletal muscles release myokines during contraction, having a hormone-like function by mediating specific endocrine effects on other organs or acting locally through paracrine mechanisms.

Myokines provide a conceptual basis for explaining how the muscles communicate with other organs, because they are substances that are able to communicate at a "long distance" and has essential functions for the proper functioning of the body. Myokines affect muscle mass and myofiber switching, and have profound effects on the metabolism of glucose and lipids and inflammation, therefore contributing to energy homeostasis.

In conclusion, the skeletal muscle is an endocrine organ responsible for the release of myokines that are proteins able to restore a healthy cellular environment and that help prevent metabolic diseases.

TITLE: HORMONAL FUNCTION OF BONE: OSTEOCALCIN

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Bone is not only an organ affected by hormones and tissue factors. In fact, bones also produce substances with hormonal characteristics that discharged into the bloodstream affect structures and systems. That is why it is considered an endocrine organ.

Osteocalcin is a low molecular weight protein constituted by 46-50 amino acids that have typical characteristics of hormone. Three of these amino acids contain γ -carboxyglutamic acid, which allows a connection to calcium. Calcium promotes the link with hydroxyapatite and subsequent accumulation in the bone matrix, stimulating mineralization. Osteocalcin is a non-collagenous protein that belongs to extracellular bone matrix and dentin.

Osteocalcin is synthesized by osteoblasts, hypertrophied chondrocytes and odontoblasts. The higher fraction of osteocalcin is found in the bone matrix. Although, a small percentage passes into the bloodstream and acts on pancreatic- β -cells, adipocytes, muscles and testis, where it stimulates pancreatic- β -cells and increases tissue sensitivity to insulin. Thus, it reduces triglyceride levels and consequently decreases visceral fat quantity, besides enlarging the muscle strength with regular physical activity and increasing the synthesis of testosterone in Leydig cells. Testosterone is responsible for germ cell maturation and prevents their apoptosis. Despite their functions are still not very well known it is believed that osteocalcin is an osteoblastic activity marker that enables detect several pathologies like diabetes, osteoporosis, acromegaly and acts like a bone metabolism monitor during perimenopause and post menopause.

Like everything in science, with the technological developments the knowledge about this protein will be more certain and may be discovered new functions.

TITLE: ELETROCARDIOGRAM

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An electrocardiogram (ECG) is a test that measures the electrical activity of the heartbeat. An electrical impulse or wave travels through the heart in its every beat which makes it contract and pump blood. There are 3 types of waves: P, QRS and T. The P wave represents the auricular depolarization, which means it records the moment that auricular contraction occurs; QRS complex, formed by Q, R and S waves, represents the ventricular depolarization and T wave represents the ventricular repolarization. The ECG has 12 derivations grouped into 3 groups: bipolar derivations of the members (I, II, III), unipolar derivations members (aVR, aVL, aVF) and also the pre-cordial leads (V1, V2, V3, V4, V5, V6). Through an ECG a doctor can determinate how long the electrical wave takes to pass through the heart, finding out how long it takes to travel from one part to the next and showing if the electrical activity is normal, slow, fast or irregular. A cardiologist may also be able to find out if parts of the heart are too large or overworked, measuring the amount of electrical activity passing through the muscle. The main applications of ECG are arrhythmias, heart rate monitoring, disorders in the activation sequence, myocardial ischemia and infarction, drug effect, electrolyte imbalance, pacemaker monitoring. Besides the discomfort associated to the removal of the stickers, this test isn't painful or risky to the patient since it only measures the heart's natural electric activity.

TITLE: PULMONARY HIPERTENSION

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Pulmonary hypertension is a type of high blood pressure that affects the arteries that carry blood from the heart to the lungs. These arteries become narrow or blocked so it's harder for blood flow through them. The blood pressure raises in the lungs and the heart has to work harder to pump the blood. The heart muscle gets weak and it can lead to heart failure. Hypertension can be caused by: autoimmune disorders that affects the lungs like scleroderma and rheumatoid arthritis, congenital heart disease, blood clots in the lung, congestive heart failure, cardiac valve disease, low levels of oxygen in the blood for a long time, pulmonary disease, obstructive sleep apnea. Sometimes, the cause of PH is unknown. The first sign of PH is respiratory deficiency or fatigue frequently on activity. However, the symptoms manifest with light exercises or in a rest time after exercise. Other signs are ankles and legs swollen, skin and blue lips, chest pain, dizziness, weakness and faints. The pathology can be determined with a diagnosis through non-invasive methods like two-dimensional echocardiography with Doppler. The diagnosis of PH has become very usual in clinical practice, however, their interpretation, diagnosis and therapeutic approach continue to be a challenge. PH has no cure, treatment may help relieve symptoms and slow the progress of the disease. The treatment can include medication, surgery, therapy or lifestyle changes. An appropriate diagnosis must be made by a cardiologist or pulmonologist because treatment varies with the type of PH and its severity.

TITLE: MECHANISMS OF ANGIOGENESIS

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Angiogenesis is the development of new blood vessels from pre-existing vessels. It is stimulated by hypoxia and formation of new tissues, because they need irrigation. It occurs in healing, in the menstrual cycle, cancer and inflammatory and ischemic disorders. This process is used in the diagnosis and treatment of diseases. The vasculogenesis corresponds to the development of new vessels from endothelial primordial cells (originating from angioblasts), occurring mostly in the embryonic period.

Angiogenesis begins with the breaking of basement membrane, for which contribute the systems of metalloproteinase and plasminogen activator. Next, the endothelial cells migrate and proliferate. Finally, there are established efficient contacts between cells, with deposit of the basement membrane for stabilization of the new vessel.

It is the joint action of angiopoietina 2 and VEGF, the stimulus comes to angiogenesis. Even if there angiopoietina 1 in the middle, when there is this angiopoietina 2 that binds TIE -2 receptor causing VEGF binding to endothelial cells and consequent proliferation of endothelial cells.

Abnormal functioning of this process causes diseases. In diseases caused by insufficient disruption is administered an enhancer, such as in heart disease, ulcers and infertility. In excessive disruption, it's administered an inhibitor (medicine), as in cancer, blindness, rheumatoid arthritis, psoriasis, AIDS and retina diseases.

Angiogenesis is involved in cancer: the characteristic accelerated metabolism of tumoral cells promotes hypoxia and the consequent segregation of VEGF which stimulates the development of new blood vessels that irrigate the tumor, allowing their growth and metastasis of cancer cells.

TITLE: AUTONOMIC NERVOUS SYSTEM AND EXERCISE

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The Autonomic Nervous System (ANS) is composed by two subsystems (sympathetic and parasympathetic).

ANS responses are held through the sympathetic (direct and indirect) and parasympathetic autonomous ways. In the indirect sympathetic way (slower, but with a longer-lasting response), the suprarenal medulla produces adrenaline that, carried by the blood, will act on the adrenergic receptors β_1 , β_2 and β_3 of the target organ. In the parasympathetic way it's the acetylcholine that will act on the muscarinic receptors, while on the direct sympathetic way it's the noradrenaline that acts mainly on the adrenergic α receptors.

The sympathetic will trigger responses like: produce vasodilatation; dilate the airways; decrease the activity of non-essential organs for physical exercise; increase heart rate and force of contraction; induce a constriction of blood vessels in tissues not involved in the exercise.

The muscle cells will be stimulated to degrade glycogen into glucose and, in the liver, hepatocytes are stimulated to release that glucose in the blood. In turn, adipocytes will unfold triglycerides, releasing fatty acids into the blood, which then will be used as energy source.

The increase of parasympathetic activity will reduce heart rate, airways and pupils diameter, etc. The ANS plays a crucial role in the cardiovascular response to physic exercise, since it controls heart rate and blood pressure to match the systemic oxygen delivery to the metabolic demand. That's why people with autonomic disorders have low levels of VO_{2max} (maximum rate of oxygen consumption during exercise), indicating reduced physical fitness and exercise capability.

TITLE: EVOLUTION OF RELATION BETWEEN EPIDEMIOLOGY AND PUBLIC HEALTH

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The aim is to explain Inception, The Reason for Being, the nature and perspective of the Relationship Between Epidemiology and Public Health through a historical reading. These have evolved and making sense together , striving to maintain its integrative essence , since they are challenged by exposure of the population to disease factors. Your evolution in the future depends on the evolution of own problems.

Since always , the ideas as exposure to factors and their apparent effects on health would eventually be documented. Populations were sometimes swept away by waves diseases interpreted like transmitted , although they hadn't always this nature. The Public Health aims to provide the best level of health at the greater number of people, for that, the Public Health study the health ant the phenomenon with her related, using the community resources. The Epidemiology is related with the production and management of knowledge studying the disease and health outcomes like there own determinants.

The discipline must assume more knowledge anticipating the future, this way, the Epidemiology must be trained better in the timely preparation of trend projections and simulations, scenario that must be building credible and useful. This scenarios refers to the predictable results in alternative population interventions, to the selection of priorities and to the definitions of objectives related with health benefits.

TITLE: THE EPIDEMIOLOGY IN ENVIRONMENTAL HEALTH AND OCCUPATIONAL HEALTH

Authors: *Adriana Marques, Ana Rita Cunha, Andreia Nascimento, Inês Nunes, Joana Rodrigues, João Rodrigues, Márcia Santos, Maria Viseu, Miguel Ferreira, Roksolana Stefury*

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The practice of environmental health comprises a vast and wide range of disciplines that study the environmental impact on the health of populations and this run of prevention and control actions to reduce or completely eliminate this impact. Research has done much to highlight the environment as a primary element and condition of the health level and / or disease of human populations. Populations studied by environmental epidemiology are usually divided into two: the working population, exposed to the independent variables of interest in the workplace; the general population exposed to various agents in the environment.

It is important to note some differences in the two environments, both in environmental and occupational environment. While in the workplace, individuals are homogeneous while environment individuals belonging to different age groups.

In epidemiological research, the construction of the index takes into account various parameters such as age, gender, habits, race, etc. and their values are influenced by time. The expert groups recommend an intensive use of epidemiology through population studies carefully designed to identify and quantify risks associated with environmental agents.

We conclude that with the epidemiological investigation we can characterize populations, identify environmental and occupational risk factors, implementing preventive and / or corrective measures, acting proactively improving thus the health indicators.

Keywords: epidemiology, environmental health, occupational health and toxicology

TITLE: CONSIDERATIONS REGARDING THE USE OF EPIDEMIOLOGY IN ENVIRONMENTAL HEALTH STUDIES**Authors:** *Inês Vieira, Maria Monte, Rodrigo Carvalho***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The Environmental Health contains numerous methodologies for epidemiological studies, working with other areas of research. It is the most complex collective health in this business as it encompasses various topics. With the increase in diseases related to environmental issues, it was necessary to introduce epidemiological studies in this area. These studies allow us to develop preventive actions, and we can identify three stages in the epidemiological methodology in Environmental Health: describe, analyze and intervene.

According to their methods and goals, epidemiological studies can be classified in observational / descriptive studies, observational / association studies between variables, evidence from studies of causality and intervention studies.

There is a relation between determining factors of the environment and human health will show whether measures of prevention and control of the risks related to diseases or other health problems. There are five levels of indicators: driving forces; pressure; exhibition; effects.

There are monitoring systems that contain information related to certain environmental factors, such as: water quality, air quality, soil quality, natural disasters and even accidents with dangerous goods, in order to prevent possible anomalies.

The epidemiology evaluates the risks by comparing statistical tests, the event occurrence between exposed and unexposed population groups or between sick and not sick.

In conclusion, for the development of epidemiological studies on environmental health, it is urgent to develop multidisciplinary teams who rely on professionals from different fields, such as statisticians, toxicologists, ecologists, doctors, environmental health technicians, giving specific contributions, reaching thus goals common.

Keywords: Epidemiology; Environmental health; Methods; Surveillance; Monitoring; Risk assessment.

TITLE: EVALUATION OF MICROBIAL CONTAMINATION OF WATER AND SURFACES IN INDOOR SWIMMING POOL OF TYPE I**Authors:** *Elíana Rodrigues; Célia A. Gomes***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal*

The present investigation intended to assess of exposure of users and professionals from an indoor swimming pool to microbial contamination. The study was conduct in an indoor swimming pool of type I (municipal), with two water tanks integrated, and one wash-feet. Water samples were collected in the tanks and wash-feet of the swimming pool, for microbiological analysis of common indicators of the water quality, as well as in the surfaces sample collection, to quantify the number of bacteria and fungi colonies. Assessment of the physical-chemical parameters of water were also carried out: temperature, free chlorine and pH. The results for the bacteria concentration in the water of the swimming pool were zero, except for one sample taken in the learning tank. In relation to the water of wash-feet, the results demonstrate that the microorganisms cultivated at 37°C were microbiological parameter with increased expression of non-compliance, having been identified faecal enterococci and *Pseudomonas aeruginosa* in three and one of samples analysed, respectively. For the physico-chemical parameters, it was found that the most of the free residual chlorine and pH values in the water tanks and wash-feet, did not comply with the standard reference values. With regard to the surfaces, the results indicate that there is a high degree of microbial contamination of surfaces, which correspond to floors of the nave of swimming pool. The data obtained show that the users and professionals of the swimming pool are exposed to biological risk particularly associated with water contamination of the wash-feet and floors.

KEYWORDS: Indoor swimming pools; Microbial contamination, public health, biological agents evaluation.

**TITLE: ANTIGENS OF THE NEW HISTO-BLOOD GROUP – FORS SYSTEM: EXPRESSION
IN CANCER TISSUES**

Authors: *Costa¹, Patrícia; Jesus¹, Carlos; Teixeira², Paulo; Hesse³, Camilla; Mendes¹,
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Blood group compatibility is one of the most important procedure to correctly transfuse, if the donor and receiver share the same antigens the transfusion could be performed ensuring quality and patient safety. Due to this we may think about that the expression of antigens in tissues could influence transplantation procedures. The Human Leucocyte Antigens (HLA) is the fundamental system for transplantation, but what about the blood groups, is there really contribution to the success or failure of the transplantation?

The blood group antigens may play a key role on carcinogenesis, according to several studies the Forssman antigen is present in gastric, colon, and lung cancers and its expression in tissues might be related with the antibody title in patient's plasma. What about the prognosis of the disease? Are there similarities in the Forssman antigen expression in both normal and cancer tissue? In order to answer these questions it was performed the histological technique on the samples and the identification of interest areas was possible through the haematoxylin eosin routine staining. Then a multi-tissue bloc was tested by immunohistochemistry (IHQ) for Forssman Antigens. The IHQ technique performed was based on a two-step multimer conjugate and positive staining was revealed by a brown color from an enzymatic reaction by diaminobenzidine peroxidase. Our results showed that there was nuclear staining, without prior digestion of the tissues by neuraminidase, both in normal (control tissue) and tumor tissue without background staining.

TITLE: THE SUGAR O EAT WHEN YOU DRINK**Authors:** *João Lima, Catarina Augusto, Joana Gaspar***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Escola de Hotelaria e Turismo de Coimbra - Turismo de Portugal, Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, LAVQ@REQUIMTE*

Obesity has recently emerged as a major global health problem. As the search for solutions to the worldwide epidemic continues, the relation between consumption of sugar-sweetened beverages (SSB) and body weight has become a matter of much public and scientific interest.

Our main goal was measure the impact of an awareness strategy for the content of simple sugars present a range of drinks available in the cafeteria at Escola de Hotelaria e Turismo de Coimbra. We've analyzed sales of a range of beverages by family, before and after intervention. The intervention was based on the exposure of a framework with real food and the representation of the amount of simple sugars, below the food, under the motto "The sugar that you eat when you drink".

There has been a statistical analysis of ratios and we've seen a statistically significant reduction in the number of units sold, with the intervention of coca-cola soft drinks and no carbonated beverages. Moreover, there was an increase in the number of units sold, with statistical significance, of nectars, fruit tea / infusions and milk chocolate.

We can conclude that intervention in the cafeteria of Escola de Hotelaria e Turismo de Coimbra was successful in reduction of consumption of sugar-sweetened beverages.

TITLE: PHYTOCHEMICALS IN CANCER PREVENTION

Authors: *Hélder Ferreira, Joana Santos, Sofia Ferreira e Rita Brites*

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Nowadays, it is far and widely believed that the antioxidant nutrients when applied alone do not explain the health benefits of the consumption of fruit and vegetables. There are studies showing that many compounds, not only the antioxidant nutrients, present in fruit and vegetables have a protective effect against cancer. That group of substances is called Phytochemicals. It is very important the evaluation and determination which substances and diet can avoid cancer and the mechanism involved on cancer prevention.

The aim of this work is to encourage and show how important the consumption of fruit and vegetables is before, during and after the cancer treatment.

Keywords: Phytochemicals; antioxidant nutrients; cancer; cancer treatment

TITLE: GENETICALLY ENGINEERED

Authors: *Aleida Lima; Ana Madeira; Ana Costa; Carolina Duarte*

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Genetically modified (GM) foods are foods produced from organisms that have had changes introduced into their DNA using the methods of genetic engineering. Genetic engineering techniques allow for the introduction of new traits as well as greater control over traits than previous methods such as selective breeding and mutation improvement. There is general scientific agreement that food from genetically modified crops is not inherently riskier to human health than conventional food. However, there are ongoing public concerns related to food safety, regulation, labelling, environmental impact, research methods, and the fact that some GM seeds are subject to intellectual property rights owned by corporations.

Maybe in a few years the controversy over the use of this technology will be part of the past and that current dilemmas will not raise legitimate scientific questions, but only socio-economic and political perspectives. We can understand the motivations of these issues, it is not however possible to assign the arguments that in most cases omit, or distort completely, scientific knowledge and derived applications.

The present study concerns the topic based above and referred knowledge on the need (and duty) of using all the scientific knowledge in the search of solutions to food production and conservation in a world where human population continues to grow exponentially while trying to guarantee a sustainable development. It's shown that a notably progressive increase in food quality techniques has been made over the years and that these new perspectives are essential on the achievement of even more goals in the world of Nutrition.

Keywords: Recombinant DNA technology; genetically modified plants; plant improvement; "transgenic" foods.

TITLE: THE NUTRIGENOMIC EFFECT OF ORANGE JUICE'S HESPERIDIN IN THE LEUKOCYTES**Authors:** *Daniela Carvalho; Íris Sousa; Mariana Cardoso; Rita Ribeiro***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

In healthy, middle-aged and moderately overweight men, orange juice can decrease diastolic blood pressure and improve postprandial micro vascular endothelial reactivity. The substance linked to these effects is hesperidin, a predominant flavonoid in orange juice. Flavonoids like hesperidin can mediate vascular cell function by modulating gene expression, implicated in the processes of inflammation and atherosclerosis, and intracellular signaling pathways.

It has been showed that hesperidin and the orange juice are definitely involved in the gene expression processes that regulate interactions with the endothelium and lipid accumulation.

Studies indicate that the regular consumption of orange juice can interfere with gene expression in a potentially protective cardiovascular way.

Based on these ideas it has been realized a cross-over study with the aim of assess the effect of orange juice and hesperidin on endothelial and vessel function, the second objective of the study was to examine the contribution of hesperidin in changes in gene expression in circulating blood cells.

Keywords: orange juice, flavonoids, hesperidin, gene expression

TITLE: EPIGENETIC REGULATION OF CALORIC RESTRICTION IN AGING

Authors: *Filipa Vaz, Laura Silva, Margarida Correia*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The aging is a natural process in humans, but can be affected by numerous factors like environmental factors. Within this set of factors can be detach obesity. This is a common metabolic disorder that is related to diseases such as diabetes, cancer, atherosclerosis, among others, which in turn lead to an accelerated aging. One way of controlling obesity is diet control, this is done by caloric restriction.

This issue has led to studies suggesting that caloric restriction prevents aging by epigenetic mechanisms that cause DNA damage such as its methylation and histone modification. It is believed that these mechanisms influence the chromatin structure resulting in the alteration of relevant gene expression.

The aim of the present study is to get a better understanding of the important role of epigenetics in control of the aging process and how they can be important to clinical advances in the prevention and therapy of degenerative diseases and other aging related.

Keywords: Aging, caloric restriction, DNA methylation, histone modification

TITLE: VEGETABLE INTAKE IN A UNIVERSITY COMMUNITY IS EXPLAINED BY ORAL SENSORY PHENOTYPES AND TAS2R38 GENOTYPE**Authors:** *Adriana Sousa; Filipa Oliveira; Patrícia Monteiro; Sara Barbosa***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

At the university community in study, the variations of oral sensations were measured by propylthiouracil (PROP), a substance that could stimulate the bitter taste, as well as by the number of fungiform papillae, which can improve the taste of vegetables. Different responses to vegetables' acceptance allows to sort those individuals into three groups, *supertasters*, *medium tasters* and *nontasters*, according to bitter taste sensitivity. The predictor gene of this flavor is *TAS2R38* and is made by AVI (alanine, valine, and isoleucine) and PAV (proline, alanine, and valine) alleles, which will determine the greater or lesser sensitivity to bitterness and, consequently, the acceptance and the desire to consume vegetables or the deterrence of its consumption. Therefore, the genetic variation in oral sensation can be a significant factor for eating behavior, at least for vegetables. The aim of the study is to describe the relationship between genetics and the perception of bitter taste related to vegetable consumption.

Keywords: Genetics; Bitterness; Vegetables intake; Taste; Propylthiouracil

TITLE: THE INTERACTION OF FOLIC ACID WITH DOWN SYNDROME AND ITS RELATION TO THE *MTHFR* GENE

Authors: *Ana Fernandes; Beatriz Neves; Carolina Jordão; Inês Ramalho*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Folate is a micronutrient that plays an essential role in several metabolic pathways, essentially those that lead to DNA and RNA synthesis and methylation processes. Its active form is known as folic acid, which is a water-soluble vitamin found in many foods such as meat, green leafy vegetables, fruits and some grains.

In folate metabolism, the MTHFR enzyme is essential for the proper function of this pathway. There are more than 40 polymorphisms regarding *MTHFR*, including the polymorphism associated with the C677T position in this gene. An enzymatic malfunction correlated to a folate deficiency is responsible for causing an abnormal DNA methylation and chromosomal segregation.

These two factors might be directly related to fetal development with Down Syndrome (DS), which is characterized by aneuploidy of chromosome 21 resulting, in the majority of the cases, from maternal meiotic nondisjunction.

With this study, we intend to explore the influence of maternal genes mutations involved in folate metabolism as a risk factor for the development of Down Syndrome in fetus.

Keywords: Folate; Down Syndrome; *MTHFR* gene; DNA methylation.

TITLE: *FTO* OBESITY VARIANT CIRCUITRY AND ADIPOCYTE BROWNING IN HUMANS**Authors:** *Eduarda Almeida, Fabiana Duarte, Inês Santos, Telma Casaca***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Obesity results from a positive energy balance, in other words, the intake is higher than the needs. This results in energy storage, mainly in white adipose tissue.

There is a genetic association between the *FTO* region (fat mass and obesity associated), and obesity, leading to a repression of the mitochondrial thermogenesis. The rs1421085 is the variation of a DNA sequence of a single nucleotide T (thymine) to C (cytosine), leading to *ARID5B* repressor loss of function and consequently to increased *IRX3* and *IRX5* expression (determinants of produced fat cell type). This leads to reduced thermogenesis, and so the accumulation of lipids and later to obesity.

The recourse of CRISPR-Cas9 for precise changes to the DNA sequence allowed *ARID5B* repair and, thus, the repression of *IRX3* and *IRX5*. Some study verify, in mice, that repression of *IRX3* led to a reduction in body weight and an increase in energy dissipation, with no changes in physical activity or appetite.

The goal of this wor is to understand the link between genetics and obesity, particularly the mechanism which influences *FTO* gene on energy, both consumption and storage.

Keywords: Obesity; *FTO*; *IRX3*; *IRX5*; genetic

TITLE: THE GENETICS OF PRADER – WILLI SYNDROME

Authors: *Ana Mendes; Ana Ferreira; Paula Jiménez; Tatiana Ferreira.*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The Prader-Willi Syndrome is a genetic disease, it occurs in a sporadic form. In about 65-75% of patients the disease is due to the absence of paternal genes that are usually active in a chromosomal region 15q11-q13, in 20-30% the cause is a maternal uniparental disomy in chromosome 15 and 1-3% has a mutation in the center of the imprinting controller. The Prader-Willi Syndrome is characterized by two clinical phases (phase 1 is characterized by a poor feeding and hypotonia, whereas in phase 2 the subjects show an hyperphagia leading to obesity), between the diverse clinical manifestations of the disease, the obesity is the greatest cause of morbidity and mortality.

The diagnostic criteria of this genetic syndrome are well established today. Although the importance of the symptoms for the selection of cases, the definitive diagnosis is genetic. An early diagnosis is important for a favorable evolution of the disease.

The prevention of obesity and its complications is the most important aspect to promote within the patient, especially with promotion of a healthy alimentation and regular physical activity.

The aim of this poster is to increase the knowledge of this syndrome in relation to genetics, clinical manifestations and nutritional therapy.

Keywords: Prader-Willi syndrome; Obesity; Chromosome 15; Genetics.

TITLE: FOOD SAFETY OF MEAT PRODUCTS IN THE RETAIL MARKET**Authors: Ana Azul; Carolina Moreira; Marta Cunha****Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The food is a basic necessity for survival of human beings. However, entails different risks to public health, such as pesticide residues, toxins, infectious agents, environmental pollution, etc. Therefore, food security is dependent on the effectiveness of the performance of the entities responsible for control and security markets. To do this, they must be able to guarantee total discretion in their actions, in order to reduce or avoid alarmism and panic situations on consumers. This work, we intend to highlight a number of issues on food safety related to meat products, among which are: to ensure and verify that food placed on the market does not endanger public health and protecting the interests of consumers in terms of correct and adequate information labeling.

The methodology was based on the systematic review of scientific articles and other sources of information on the subject.

After analyzing the results of meat consumption in Portugal, the reflection lies on two areas of control: the consumer information and the microbiological criteria. As for consumer information, it will require the veracity of this information on the label is guaranteed by traders. Regarding the microbiological criteria, the default rate leads to the need to ensure an increasingly strict control, both in the preventive arm, through the National Plan of Sampling either in control side, with planned supervisory actions.

TITLE: FOOD SECURITY IN PASTRIES

AUTHORS: *Ana Pimenta; Bruno Pereira; Catarina Belchior; Lydia Guerreiro*

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In Portugal there are about 11,000 companies linked to the bakery sector, pastries and similars. According to statistics, after several years of the entry into force of Regulation (EC) 852/2004 of 29 April 2004, about 40 of the units are still in default, verifying serious flaws in basic requirements food hygiene. Both the quality and food security are currently indispensable requirements in the food chain.

Food security is one of the most important public health problems worldwide. In modern times, the distribution of food is global, so if a food becomes a health hazard, the risk of spread of disease is heightened extended.

The causes have to be identified quickly and consumers need to be informed of the danger and to ensure food security, should be aware of the causes of diseases caused by food, which the steps of the production process that have more risk and how to protect the consumer .

HACCP is an acronym for Hazard Analysis internationally recognized and Critical Control Point or Hazard Analysis and Critical Control Point.

The HACCP system has at its base a preventive approach in order to be able to avoid potential hazards that could cause harm to consumers by eliminating or reducing hazards in order to ensure that they are not placed, to the consumer, not food safe.

The HACCP system is based on the application of technical and scientific principles in the production and handling of food.

TITLE: HAZARDS ASSOCIATED WITH THE CONSUMPTION OF RAW FISH**AUTHORS: *Diogo Cristóvão; Emanuel Lourenço; Gonçalo Oliveira*****Affiliation:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Food-borne diseases are mostly caused by eating contaminated or improper food for consumption, and to do so there is an increased concern for this issue to be less and less recurrent. The sushi, consisting mainly of raw fish, is quite conducive to possible contamination, which justifies the need for a study on their use, taking advantage of a well-known slogan in the area of Food Security - "From farm to fork". Adapting it to a different reality, it is possible, through literature review, to know all the stages of sushi preparation from catching fish and shellfish until the moment it is served to the consumer. It was also intended to assess the perception of sushi consumers in relation to food-borne illness. In this context, it addressed the consumption of raw fish with valence for sushi consumption, stating their various types, including hazards to human health, particularly in various aspects of food safety area - chemical and microbiological studies - for what it was intended to present a reflection of this issue in the fish area. Thus, framing its preparation, we can reflect on the most common fish in our country (salmon, tuna, shrimp and squid), mentioning the contamination of fishery products, identifying physical, chemical and biological hazards and still referring to interactions between consumption and food security.

TITLE: USE OF CHEMICALS IN THE KITCHEN

AUTHORS: *Ana Rita Ribeiro, Ariana Nunes, Filipa Ferreira, Liliana Loureiro*

Affiliation: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal*

The sanitation is conceptualized as a process of removing dirtiness by applying chemical energy, mechanical or thermal, in determined period of time, being the chemical energy from an action of products that are designed to clean by the property of dissolving, dispersion and suspension dirtiness.

The mechanical energy is derived from a physical action applied to the surface to remove the dirtiness resistant to the chemical action. We have like main objective alerting the public in general to the dangers arising from excessive utilization and also the mishandling of chemicals in the kitchen and contribute for this problem be reduced or extinguished when we inform the public about this. We pretend then through the analysis of several scientific articles evaluating the effects of the use of chemicals in the kitchen, to the handler and the consumer. We intend to evaluate the knowledge and behavior of employees of the cafeteria and bar on this theme.

To do this it is important to become aware of the correct way to store products, their composition, if the end that is intended is the appropriate, the dose to use and personal protective equipment needed in order to preserve the handler and consumer welfare.

TITLE: BIOLOGICAL FOOD VS SYNTHETIC FOOD

AUTHORS: *Diana Barreira; Ivo Roxo; Miriam Caldeira*

Affiliation: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The nutrition plays a crucial role in our lives, being present every day on our daily lives. The alimentation should be done in a correct way, to bring benefits to our health. Some products can be divided in organic food or synthetic food.

The objective of this work addressed the topic of organic foods and synthetic foods, which we will seek to make known what characterizes each of them, showing their differences, the possible consequences for our health as well as the possible benefits of these foods.

The methodology that was used in this paper was based on the systematic review of scientific articles and other sources of information on the subject. In this case we had based on two studies that meet the approached theme, one in New Jersey and another conducted in São Paulo (Brazil). The results of this study showed that was introduced food not recommended in the diet of children studied at 12 months. It was observed that the premature wear of sugar mainly in tea and non - breast milk also makes part of the culturally established habits and the tendency of mothers to offer sweet foods to satisfy the palate of children. Many of the trace minerals (mineral salts) which to some foods were totally absent in the conventional products, while the organic products were abundant.

We conclude that organic products bring more benefits for humans and in general provide better ways to fight certain diseases, offering us a healthier lifestyle.

TITLE: FOOD HANDLING IN EDUCATION INSTITUTIONS**AUTHORS: Ana Bordalo, Ana Santos, Tatiana Neves****Affiliation:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Over the last years has been verified a number of changes, both economic and socio-cultural in eating habits of the population and the type of food that consumers look for. As such, it's essential to ensure the hygiene and health of food in schools, in order to ensure the supply of safe food. Worldwide, many outbreaks of food-borne diseases have been reported in schools, there may need to train workers for a correct handling of food in school canteens, thus avoiding accidental exposure of consumers and workers to allergens. To accomplish this work, we decided to study this issue in a canteen at the Polytechnic Institute of Coimbra. This procedure involves a diagnosis of the situation, the reporting and the proposal of the fixes face the aspects that can be improved. The assessment of risks is a way of knowing the vulnerability of facilities, equipment and the environment in order to eliminate, or when this is not possible, to minimize them. We intend to make known the importance of proper handling, preparation and confection of food for consumers' health.

TITLE: Food and Sustainability

Authors: *Margarida Videira; Sandrina Maia; Ricardo Santos*

Affiliations: *Coimbra Health School (ESTeSC), Polytechnic Institute of Coimbra, Coimbra, Portugal.*

In a world of constant growth and globalization, the environmental impacts are increasingly notorious and damaging, endangering the sustainability and food security of future generations. It's necessary to create policies and strategies that reduce the consumption of foods with higher greenhouse gas emissions (such as meat and dairy products) and encourage the increased consumption of food with less environmental impact, as in the case of vegetable products (little processed and transported).

At a planetary level, we have different concerns about the sustainable development of populations. It is estimated that activities related to the food chain are the major contributor of global warming in Europe (31%).

Other than in Europe, it can be noted that, all around the world, food consumption contributes to a substantial proportion of the total energy used and total GHG emissions. Much of this so significant impact can be explained by the food system that produce emissions at every stage of its life cycle, from the creation to manufacturing, distribution and cold storage to preparation and consumption at home and finally the disposal of waste.

Fundamentally, it can be concluded that reductions in GHG emissions from this sector, undergo changes in the meat and dairy industries and changes in the diet of the population standard, aimed at increasing consumption of plant foods.

Thus, so there are more significant reductions in environmental impact, more drastic changes are needed, not only in terms of food choices but also in the production and distribution of food practices.

International Day of Persons with Disabilities, 3rd December 2015 “Images of ability” - Mainstreaming Disability in the Development Agenda

LOOK CLOSELY AND SEE

Ana Letra, António Almeida, Carolina Pita, Gabriela Neves, Inês Costa, João Sotero, Anabela Correia Martins

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Nowadays, the practice of physical exercise is becoming a habit in our every day life. For example, when we enter a gym, we see everyone performing an exercise in an equal way. Looking closely, we notice that some individuals have disabilities, which by the eyes of society would make their performance impossible.

To break the stereotype created by the world community we developed this group work, for the course Physiotherapy Theory and Practice, allusive to the International Day of Persons with Disabilities, December 3rd.

Following ICF, Disability is “an universal human experience, sometimes permanent, sometimes transient. It is not something restricted to a small part of the population”. This way, a person with disability is not necessarily a person with no functioning, because still according to ICF parameters, functioning is “a term encompassing all body functions, activities and participation”. So, considering these definitions, we should not judge a person through his or her limitations but for his/her performance in our society. Today is increasingly usual to meet a person with an amputation in upper or lower limb, as well as blind, among others, playing a very important role in several different areas. To help them overcome these barriers created by society, which may challenge their performance, there are several assistive devices and technologies, as well as the support of physiotherapists that reeducate and provide them some mechanisms which make it possible for them to perform their tasks, allowing the practice of all the abilities they are able and want to.

International Day of Persons with Disabilities, 3 December 2015

"Images of ability " - Disability and sport

SPORTS AS AN INCLUSION AND UNIFICATION PARAMETER

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Sports are an image of ability. It is an important activity which can approximate people with and without disabilities. Sports are a perfect way to make both interact and introduce the real ability picture, helps realize what the persons with disability can do, helps them create independence and strong ideas, needs for an inclusive society vision.

In Portugal, there is a national program called "Desporto para Todos" (Sports for All), developed by the government sector responsible for sports and youth. This program has several goals and one of them is about incorporate citizens with disabilities in sport activities. However, there are some barriers to its implementation: lack of institutions, mainly on countryside, financial support, adapted equipments and qualified people for adapted sports, like t physiotherapists.

Pysiotherapists have an important role in managing adapted sports, as well as identifying the accessibility barriers; there is a generalized mismanagement of the surroundings structures and pathology itself is the main factors determining disability. They have to raise this awareness on people and advise them not to discriminate by peaty and unethical language being that de use of wrong concepts like "abnormal and normal", "less than", "the others", "disabled", among others.

The environment must have the physical and social characteristics in order to keep equality.

Despite the initiatives to create images of ability there is still a retrograde vision of society that continues to see only the impairment rather than the person. All of us have to be aware that equality is an unquestionable concept.

International Day of Persons with Disability, 3 December 2015

“Images of Ability” - Disability and the media

LIMITATIONS DO NOT DEFINE THE LIMITS

José Filipe Alves, Filipe Santos, Mónica Simão, Hugo Ribeiro, Iara Rosa, Anabela Correia Martins

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On December 3rd the world celebrates the International Day of Persons with Disabilities in order to aware the society for the preconceptions and impediments to the active participation of people with disabilities in political, social, economic, cultural and artistic aspects.

Nowadays, approximately 15 per cent of global population lives with disabilities. These people are frequently labelled and negatively stereotyped by the society before his disability, visible or invisible.

By the International Classification of Functioning Disability and Health (ICF), a person with functional or structural impairments has not necessarily a more restricted social participation, if the environment suits his or her condition. The derogatory perception that is often directed to them, arise success stories and personal and social resilience sublimely have been promoted by the media.

Mafalda Ribeiro is one of these many successful stories. The sharing of such cases by the media has made people like Mafalda symbols of persistence and courage. Mafalda is a 32 year old woman who suffer of osteogenesis imperfecta, a disease usually known as brittle bone. Due to her congenital disease, Mafalda lives attached to a wheelchair and have 97 centimetres tall, but she never stop living life to the fullest, being an independent and successful woman with a journalism degree. In this case, we can realize that functioning, is closely linked to how the individual perceives the difficulties and self-assessment. This perception may be facilitated by family members, therapeutic and social resources, such as the physiotherapy.

International Day of Persons with Disabilities, 3 December 2015

“Images of ability” - Disability and Sports

THERE’S NO LIMITS WHEN DETERMINATION PREVAILS

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Every year, on the 3rd of December, the world celebrates the International Day of Persons with Disabilities, bringing a positive contribution regarding the social perspectives of the persons with disability. Also the International Classification of Functioning, Disability and Health (ICF) has a key role in all aspects related to health, especially when we talk about impairments and disability. According to the ICF, these words are not synonymous of inferiority.

To demonstrate that, we talk about the story of Lauren Watson. Born in Australia, with 34 years old, she’s an image of strength, hope and faith. Lauren is an aerial acrobat totally passionate about what she does. She once was a circus performer but now she’s currently dedicated only to the art of the air show.

Lauren is like any other aerial acrobat from an artistic point of view. She trains aerial silks, lyra and hammock and aerial chair. Lauren is a complete artist.

However, Lauren has a paraplegia since her 19’s, when he had a car accident. Lauren has some movement and sensation in the lower part pf her body. After several sessions of physiotherapy, Lauren realized she needed an exciting activity for her recovery and that’s when she became interested in the aerial stunts.

Lauren created a blog called "Fitness to Free" to show other people with disabilities what they can achieve.

She, like other people and institutions, contributes to the promotion of the image of the rights, equal opportunities, inclusion and participation of citizens with disabilities.

International Day of Persons with Disabilities, 3 December 2015

“Images of Ability” – Disability and women

THE ENCOURAGEMENT OF WOMEN AND GIRLS WITH DISABILITIES THROUGH ROLE MODELS: THE CASE OF BETHANY HOPPE

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In the context of the 2015's celebration of the International Day of Persons with Disabilities, the present work will try to shed some light on the topic of disability in women and girls, in particularly concerning the demystification of the concept of disability as a terrible burden in women and girls' lives. Frequently, people with disabilities are still regarded with a sense of pity and a notion of charity. Although compassion is truly a noble feeling, this image of people with disability being regarded as unable to live normal and fulfilling lives must be demystified. Bethany Hoppe teaches public speaking at the prestigious Middle Tennessee State University, works as a voice-over artist, author, public speaker, dancer, and still manages to be a mom and wife. Although Bethany was born with spinal bifida that left her in a wheelchair, she never let her wheelchair prevent her from fully participating in life. As a child, Bethany participated in wheelchair basketball, weightlifting, wheelchair dance; she did it all. She knew, however, that she needed a solid education in order to become independent in this competitive world, so she went on to study communications at Edinboro University of Pennsylvania, where she received her master's degree in communication studies. Whether she's busy helping nonprofit organizations, writing books, giving TEDx speeches, or taking care of her family, she proves that disability shouldn't be a stigma and she clearly shows other women and girls with disabilities that they too can get what they deserve from life.

International Day of Persons with Disabilities, 3 December 2015

“Images of Ability” – Disability and Sports

JORGE PINA: THE BARRIER BREAKER

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To celebrate the International Day of Persons with Disabilities, the United Nations proposed the theme “Images of ability” as a way to sensitize society for this problem, having as the main goal including all in one society.

Sports can be a way for the inclusion of Persons with disability, since they are usually victims of prejudice, marginalization and depreciation. Sports can show their skills, which helps society be more open minded towards disability.

Jorge Pina is a dynamic person. He’s a fitness instructor, a physiotherapist’s assistant and a sportsman. He stood out in athletics at the 2009 European Championships where he won the silver medal and in the marathon of Paris, where he also conquered the silver medal. He was the national champion in the 1500 meters in 2011 and is already setting goals for the 2016 Paralympic games in Rio de Janeiro. He is the founder of the Jorge Pina Association, an association that promotes good citizenship, peace, psychic and social well-being through sports and fun activities for teenagers.

At the age of 28, Jorge Pina was about to compete in the world box championship when he became blind. However he was able to win all the above prizes being blind, which made him a national symbol.

Difference is an essential part of human diversity, so society should change the way of looking to the persons with disability, because our actions are a reflection of the way we think and talk.

International Day of Persons with Disabilities, 3 December 2015

“Images of Ability”- Development and Human Rights

FIGHTING FOR EQUITY

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Persons with disabilities face multiple problems daily. Human rights are violated, such as freedom and non-discrimination, as society doesn't truly embrace the obstacles that persons with disabilities have to go through.

Mara Gabrilli, a 48 year old woman, suffered a severe car accident that left her quadriplegic. However, instead of giving up on life she decided to fight for the Human Rights of people with disabilities and improve technology and accessibility for them by founding, in 1997, the Mara Gabrilli Institute, whose goal is to develop and promote many projects such as the Universal Design.

One of the biggest obstacles for those people is, closely related with the environment around them rather than their own limitations. Everyday, they are unable to perform some activities since they have difficulty having the access to infrastructures and public places. Such problems contemplate the lack of ramps, inaccessibility of public transportation and also in the work market where they are seen as “less able to”.

As citizens in a XXI century society, we are referring to the violation of human rights and discrimination against persons with disabilities. We live in such an advanced time and we have been developing more each day, however, we tend to forget that this evolution needs to join all the pieces in a way that population grows in equity and justice. Everyone has the same right: being fully independent and functional day-by-day!

International Day of Persons with Disabilities, 3 December 2015

“Images of Ability” - Development and Human Rights

PLAYING WITH LIFE

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According to the Universal Declaration of Human Rights «all human beings are born free and equal in dignity and rights. Endowed with reason and conscience, should act towards one and another in a spirit of fraternity». This reference leads us to reflect on our participation in various day-to-day contexts independently of how our anatomic structures function.

The desire to accomplish goals and achieve victory is the engine that drives our development as human beings. However, no matter how determined we are, when the environment is not encouraging, it brings further difficulties, as we depend on this as autonomous beings.

José is 71 years-old. Writing, driving and playing cards are some of his passions. He is proud of the stories he tells his grandchildren about his adventures, including one about the fact that his right forearm had to be amputated due to a war injury. Mainly because he had been right-handed until then, the way he performed some routine activities had to be adapted. Nevertheless, this adaptation was never an obstacle to execute any of them. His professional situation was not affected by the accident, since he kept his job in the office where he already worked, doing the same tasks.

This is an example of success and conquest, like many others, which emphasizes the idea that the world is made by people, not by functional arms, legs and torso.

International Day of Persons with Disabilities, 3 December 2015

“Images of Ability” - Inclusion matters: access and empowerment of people of all abilities

DISABILITY AND SPORTS

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Through the United Nations Convention on the Rights of Persons with Disabilities, with the combination of UN Enable and in the context of the celebration of the International Day of Persons with Disabilities (December 3), we made this project in order to contribute for a change in the society way of thinking about persons with disabilities, giving images of their abilities.

In order to show that an impairment cannot affect the the participation, we used the theme "Disability and Sports", using the example of the athlete Jonnie Peacock. Born on May 28, 1993 in Cambridge, England, he is known for his irrepressible enthusiasm and willpower that led him to break records worldwide. When he broke the world record in the 100m speed proved to be a promise in athletics. However, Peacock was only 5 years old when, after contracting meningitis, lost his right leg, later replaced with a prosthesis.

Johnnie says he does not regret his physical condition, adding that "People have to stop feeling sorry these athletes and have to start thinking that they have opportunities to show their skills, and are very good to do it."

Thus, through sport, people with and without disabilities can interact in a positive context forcing reshape opinions on what people with disabilities can or cannot actually do, thus highlighting its abilities reducing the tendency to see the disability instead of the person itself.

International Day of Persons with Disabilities, 3 December 2015

“Images of Ability” - Women and Girls with Disabilities

LIVE YOUR LIFE! BE INVINCIBLE, BE WOMAN!

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Women who openly use their knowledge and power receive public recognition and honor. They break down stereotypes and become women at their own commandment. We know that women with disabilities are often discriminated because society thinks they cannot make their life work as well as the ones without any limitation. The truth is that we are all humans and have all the same rights, so everybody should be treated equally.

Adrianne Haslet-Davis is one of the many examples that a woman with disabilities can be successful. She is a 34 years old and is a dance teacher who lost her leg in a terrorist attack at Boston marathon in 2013. A year after, she returned to the stage thanks to the biophysicist Hugh Herr, who developed a new kind of prosthesis that allowed her to do all the dancing moves. Nowadays, she is living her dream doing what she loves most and teaching the world not to give up on their lives, no matter what.

In cases like this one, the physiotherapists have an important role because they provide to the person a physiological and dynamic gait. They teach the person how to start a new life routine, how to walk with a prosthesis, behaviours to avoid and cares that must have, as well as, promoting an accessible environment.

As you can see, there's no restriction on her participation. It is all about courage and hard work. Once persons with disabilities understand their problem and learn how to overcome it, there's no room to the concept of disability.

TITLE: WOLFF PARKINSON WHITE SYNDROME**Authors:** *João Alves, Diogo Fraga, Ricardo Simões, Joaquim Pereira***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Wolff-Parkinson-White syndrome is characterized by the presence of an accessory pathway with conduction capacity which predisposes patients to the occurrence of tachyarrhythmias.

The most frequent manifestation on this syndrome is Atrial fibrillation that is present in about one third of patients and may be associated with a poor prognosis if the accessory pathway has a short anterograde refractory period, which can trigger a rapid ventricular response, degenerating into ventricular fibrillation and sudden death. The accessory pathways can have different locations along the circumference of the atrioventricular valves and can even be multiple. Most patients are young and do not have structural heart disease. Towards prevention of sudden death is important to assess patients individual risk, in order to conduct a targeted approach.

Therefore, the electrocardiographic and electrophysiological studies have greater significance in identifying the location of accessory pathway, its conduction characteristics and their role in the arrhythmia. Symptomatic patients and those with high risk occupations are indicated for accessory pathway ablation, as standard therapy; on the other hand, the approach of asymptomatic patients is more controversial.

Keywords: Wolff-Parkinson-White syndrome, accessory pathway, preexcitation, electrophysiological study

TITLE: THE EFFECT OF HEMODIALYSIS ON ELECTROCARDIOGRAM

Authors: *Diogo Fraga, João Alves, Ricardo Simões, Joaquim Pereira*

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Cardiovascular events are the most common causes of morbidity and mortality in dialysis patients. Those are at an elevated cardiac stress by repetitive and intermittent nature of dialysis. Changes in ventricular electric systole induced by dialysis are an important contribution in predicting the occurrence of arrhythmic sudden death in renal failure.

However the rapid changes in volume and electrolyte concentration after hemodialysis can lead to malignant arrhythmias. Nowadays we still have a big debate about the cardiac complications such as anemia, hypertension, volume overload, electrolyte imbalance, hyperlipidemia and arteriovenous fistula that can also contribute to decreased lifespan in these patient groups. Increase in wave voltage, such as QRS, T and P waves, has been attributed to an increase of the transfer impedance of the body by liquid extraction after hemodialysis. In addition to increasing wavelength, wave durations have also been shown to be effected by hemodialysis. The main goal of our project is to study in general terms the effects of hemodialysis on the electrocardiogram (ECG) in patients with chronic end-stage renal disease (ESRD).

To conclude the ECG changes including prolonged QRS and increased QTc interval after hemodialysis should be kept in mind and assessed carefully in ESRD patients because we know prolongation of these parameters may prove to be a further non invasive marker of susceptibility to ventricular arrhythmias.

Keywords: renal failure, hemodialysis, malignant arrhythmias

TITLE: ARRHYTHMOGENIC RIGHT VENTRICULAR DYSPLASIA AND CARDIOVASCULAR RISK

Authors: *Mariana Oliveira, Joaquim Pereira.*

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The arrhythmogenic right ventricular dysplasia is a myocardial disease, unknown etiology that mainly affects the right ventricle and is characterized the regional replacement of right ventricular myocardium by fibrous tissue or fibroadipose. It manifests itself primarily in adolescence and affects more often the male. It is a common cause of sudden death, and this is often the first manifestation of the disease, making it a condition difficult to diagnose.

TITLE: FLUTTER AURICULAR VS FLUTTER VENTRICULAR

Authors: *Vanessa Cordeiro, Joaquim Pereira*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTESC), Instituto Politécnico de Coimbra, Coimbra, Portugal. (Insert others if applicable)*

This poster will be approached the headset flutter and ventricular flutter, and was carried out under the discipline of electrocardiology II.

Here you will find some information on this topic.

Will therefore be initially presented a brief definition of Fa and Fv , followed by their environment today and ending with some electrocardiographic findings of real life, so that in an emergency situation (or not) can identify these two grids problems in our health .

In an "open " the reader's interest, I decided to write here in this summary, a brief definition of these two themes we can find in the future poster.

So we have that the headset has frequencies in the range of 250 to 350 bpm still having a P wave called F (aliasing pattern) , and the presence of an AV node blocking of 2: 1 or even 4: 1 , leading to a ventricular frequency around 150 180 beats per minute. The QRS complex is normal, although occasionally may have aberrant conduction. Already ventricular corresponds to a heart rate of about 250 bpm and is very dangerous. The ventricles contract so quickly, there is no time to fill with blood. In this situation the heart starts pumping very little blood into the circulatory system. One is close to losing consciousness.

In short, this poster will contain information of public interest, so surely arouse the attention of everyone.

TITLE: HORMONE REPLACEMENT THERAPY IN MENOPAUSE

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According to current evidence, hormonal substitution therapy must be prescribed by short-term to control vasomotor control and urogenital manifestations through menopause. Estrogen therapy women spare is reserved for hysterectomy, while estrogen and progesterone association and mandatory paragraph women with uterus in situ.

After renowned clinical trials' publications, the advantages in the maintenance therapy in cardiovascular protection, osteoporosis and dementia were proven to be non existent.

In contrast , there were studies since 2000 that suggest the ineffectiveness / discrete effectiveness of hormones at older conditions , and warned it's adverse effects, like breast cancer, cancer of the uterus (only with estrogen therapy) , ovarian cancer , increase the risk coronary heart disease, stroke , deep vein thrombosis, dementia and Alzheimer's disease

TITLE: EMERGING MICROORGANISMS: *BACILLUS ANTHRACIS*

Authors: *Cláudia Fernandes; Mariana Mendes; Tânia Lourenço; Telma Faria*

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Bacillus anthracis is a Gram positive, rod-shaped, sporulated, non-motile bacterium. It grows under aerobic/facultative anaerobic environments, between 12 - 44 ° C (optimum growth at 37°C). During the life cycle the spores germinate to vegetative form when exposed to 65°C.

This bacterium is responsible for Anthrax, a serious infectious disease, also named Carbuncle, which affects mainly herbivores, but also humans that are in contact with animals and/or contaminated products.

It is the aim of this study to evidence its microbiological characteristics, cycle of infection and transmission, clinical aspects, symptomatology, treatment and possible forms of control and its potential as a bioterrorism agent.

A bibliographic search was conducted between 1992 and 2014: four technical books of microbiology, three scientific review articles and a website were selected.

It was concluded that the disease manifestation is related to the exposure and that the antiphagocytic polypeptide capsule and toxins production are the factors responsible for the bacterium virulence. Clinical symptoms are variable or even asymptomatic and it is possible that sudden death occurs. The prevention of Anthrax includes the vaccination of primary agents and of humans that get in contact with the source of contamination. In regard to treatment, penicillin is the chosen antibiotic.

The eradication of the microorganism and disease is unlikely because of the spores resistance, efficient dissemination, short incubation period and high toxicity. *Bacillus anthracis* is being used by the USA since the World War II as a bio weapon for bioterrorism.

TITLE: EMERGING MICROORGANISMS - CLOSTRIDIUM DIFFICILE

Authors: *Bárbara Cruz, Cátia Silva, Damiana Chumbinho, Mariana Couras, Marta Pedro*

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Clostridium difficile is a bacterium that is naturally present in the human intestinal flora. Usually it does not cause problems in healthy people. However, if there is a moment of disorder in the natural balance of this bacterium, it can multiply, release toxins and cause uncomfortable symptoms.

The majority of these infections are caused by resistance to antibiotics and, for that reason, occur mostly in hospital environments. *C. difficile* is transmitted through contact surfaces / clothing / bedding used by infected persons, through dissemination of spores produced by this bacterium. It may be easily diagnosed by laboratory analysis to a person's feces. If the presence of toxins is detected, then the doctor must decide the treatment (only in people with symptoms), which, in a first instance, will require stopping the use of antibiotics. If the symptoms persist, then a specific drug therapy will be prescribed for heavy diarrhea and colitis. Only in very rare cases it is necessary to resort to surgery to restore the damage of intestines, especially the colon perfusion. Prevention of *C. difficile* infection depends on compliance with rules of hand hygiene and the environment.

TITLE: EMERGING MICROORGANISMS – FOOD PARASITES: *ANISAKIS SIMPLEX* E *DIPHYLLOBOTRIUM LATUM*

Authors: *Ana Portásio; Bianca Pessoa; Catarina Lourenço; Karina Garcia; Marlene Silva*

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The presence of parasites in fish is usual, however it only represents a biological hazard when consumed in larval stage, in raw fishes and shellfishes, undercooked or that haven't been frozen. The most important parasites belong to the family Anisakidae, in particular the nematode *Anisakis simplex* which is responsible for the parasitic disease Anisakiasis.

The Diphyllbothriasis, on the other hand, is caused by the parasite tapeworms *Diphyllbothrium latum* which achieves his sexual maturity in the intestinal tract, where it can persist for more than ten years, reaching more than ten meters long.

Most of the time, people infected by *Anisakis simplex* and *Diphyllbothrium latum* don't have symptoms. However, there are some that are common, as pain and abdominal discomfort, nausea, diarrhea and vomiting. Due to the *Anisakis simplex* parasite, also blood and mucus in the stools, and fever may be present. Infection by *Diphyllbothrium latum* may also cause fatigue, flatulence, anorexia, megaloblastic anemia and intestinal and biliary duct obstruction.

The Anisakiasis disease can be detected by gastroscopy examination, where the doctor can see the larvae and then proceed to their removal from the stomach. Diagnosis of Diphyllbothriasis is achieved by microscopic identification of eggs or tapeworm segments in a stool sample.

Pre-cooking the fish and frozen it for seven days at a temperature of -20°C leads to the elimination of fish parasites and decreases the risk of infection.

TITLE: EMERGING MICROORGANISMS – *HELICOBACTER PYLORI*

Authors: *Anabela Lopes, Andreia Acúrcio, Inês Silva, Paula Silva, Rita Peixoto*

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H. pylori is a gram-negative bacterium which is estimated to infect more than half of the worldwide population. This bacterium destroys the natural stomach barrier, leaving its walls exposed to the gastric acid and if no treatment is applied it can lead to gastritis or even to stomach cancer. *H. pylori* causes about 90% of the duodenal ulcers and 80% of the gastric ulcers. Meanwhile, not every carrier of this bacterium develop stomach cancer. The exact mechanism of transmission and infection of *H. pylori* is still unknown but it is believed that the human being is practically its only natural reservoir. Through this research it is intended to identify the ways of contagion of this bacterium beyond the symptoms of an infection. Treatment and prevention measures to put into practice are also an object of study. In short, the infection caused by *H. pylori* is a prevalent health problem in Portugal and worldwide, so it is necessary to take preventive measures and investigate effective ways of treatment/easy administration, being the eradication of *H. pylori*, with the intention of prevention and decrease of the incidence of stomach cancer, a perspective that it is kept under investigation.

TITLE: EMERGING MICROORGANISMS - MYCOBACTERIUM TUBERCULOSIS

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Tuberculosis is an infectious disease caused by a bacterium called *Mycobacterium tuberculosis* or Koch bacillus. This bacterium attacks mainly the respiratory system but it can also affect other organ systems and different body parts. It is a disease characterized by tuber formations, necrosis, fibrosis, abscesses and calcifications in the lungs. The symptoms associated to this disease are breast ache, persistent cough, loss of appetite, fatigue, fever, among other symptoms.

Regarding the Gram staining method, this bacteria cannot be considered Gram-positive nor Gram-negative, because its cellular wall is composed of complex lipids that inhibit the penetration of the gram's stain. This cellular wall also resists to the discoloration caused by acid or alcohol and, for that reason, the *Mycobacterium* is called acid – resistant. Tuberculosis disease has been around for thousands of years, but the identification of *Mycobacterium tuberculosis* bacterium, has only happened in the year of 1882 by Robert Koch. The feature that makes it unusual was a waxy coating that made the bacteria resistant to the Gram method. The first antibiotic to treat tuberculosis has only appeared in 1943, which is called Streptomycin and it was discovered by the American biochemist Selman Abraham Waksman.

TITLE: EMERGING MICROORGANISMS - WATERBORNE MICROORGANISMS IN HOSPITALS

Authors: *Inês Dias; José Carvalho; Pedro Silva; Tânia Borges*

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Hospital-acquired infections (HI) are contracted by a patient while under medical care and reflect the morbimortality of affected patients. They are associated with multiple intrinsic and extrinsic factors (factors inherent to the patient and/or related with the environment). The severity of the IH could be related with the virulence of the microorganisms itself. Different authors have studied several cases of HI due to *Staphylococcus aureus*, *Staphylococcus coagulase negative* or *Edwardsiella tarda* as predominant microorganisms. Late cases have been linked with the rapid growing mycobacteria (MGR), which have been considered as emerging pathogens. *Mycobacterium fortuitum*, *M. abscessus* and *M. chelonae* were recognized as intravenous drug contaminants and of other products, including medical devices such as catheters.

The main spreading factor relates to the hygienization efficiency. While water is the main vehicle, bacillus gram negative, mainly variants of *Pseudomonas aeruginosa*, are considered as opportunistic waterborne microorganisms and have been associated with outbreaks of bacteremia in contaminated dialysis fluid.

In hemodialysis, the dialysis solution must be sterile, without impurities, in order to avoid contamination. Due to the large volume of water required to perform hemodialysis, the procedure exposes the patient to associated risk factors that result in high rates of morbimortality.

So, to guarantee the safety of patients, a microbiological sanitary inspection is carried out to the water used in all processes/tools in the hospital.

TITLE: EMERGING MICROORGANISMS - TULAREMIA

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The causing agent of tularemia is *Francisella tularensis*, a gram-negative aerobic bacterium. When it enters in the organism it lodges itself in solid organs, like the heart, forming colonies. The gravity of this disease depends on the dose, via an infection and race. *F. tularensis* comprehends two predominant sub-species, *F. tularensis tularensis* and *F. tularensis holarctica*.

There are four variants of tularemia: ulceroglandular (most common), oculoglandular, glandular and typhoidal. Symptoms of this disease are fever, headaches, nasal mucosa inflammation, amongst others. The microbiological diagnostic of tularemia depends mainly on the serology, which during the last decades was replaced by an ELISA test. Only some classes of antibiotics are capable of treating tularemia with efficiency, such as the case of fluoroquinolone, tetracyclines and aminoglycosides. However due to the resistance to these antibiotics, many treatments failed. It is therefore necessary to develop new forms of treatments including the use of new antibiotics, antimicrobial peptides, other models of innate cells of the immune system and specific antibodies. We conclude that the treatment for tularemia has suffered some advances, still being necessary to continue the study in order to develop new and more efficient ways of treatment.

TITLE: EMERGING MICROORGANISMS - DENGUE VIRUS

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Dengue is an acute febrile disease whose causative agent is a virus of the genus *Flavivirus*; it is an arbovirus transmitted by the bite of the *Aedes aegypti*, vector that grows in tropical and subtropical areas. It is estimated that between 50 and 100 million people are infected annually. In Portugal, in Madeira, the first cases began to emerge in October 2012.

There are four variants of dengue, because the virus has four serotypes: DEN-1, DEN-2, DEN-3 and DEN-4. The infection caused by one of these gives permanent protection for the same serotype, but temporary and partial immunity against the other three. The main clinical forms of dengue are the classical dengue and the hemorrhagic dengue, which can progress to the most severe form that is the Dengue Shock Syndrome.

After being inoculated through the bite of the mosquito, the virus makes a first replication in muscle cells, fibroblasts and smooth cells, as well as in local lymph nodes. After multiplication, viremia starts, as it spreads throughout the body.

The virus can be detected in blood, one to two days before the appearance of symptoms such as fever and malaise, which arise after an incubation period of two to seven days. Dengue is not transmitted from person to person directly.

There is no specific treatment for dengue, but it is possible to treat the symptoms resulting from the disease with a symptomatic treatment.

The best way to prevent the disease continues to be dependent on vector control.

TITLE: EMERGING MICOORGANISMS - INFLUENZA A.

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An emerging virus is a new virus that causes infection, or that when already existing, significantly increases the incidence. These emerging infections result mostly from transmission of an animal virus to humans, a process called zoonosis.

An example of an emerging virus is the influenza virus A, also called Myxovirus influenzae, a virus with the ability to cause annual epidemics, and less often pandemics due to the fact that it exhibits high variability and adaptability. Influenza virus A presents two types of proteins on the membrane, called hemagglutinin (H) and neuraminidase (N), from which derives the name of the variant depending on which subtype is expressed, thus, leading to swine flu or avian influenza. H1N1 is the most important variant causing swine flu while H5N1 is the variant that causes a mortality rate of 100% in birds.

The swine flu is mainly transmitted by contact with infected pigs while avian flu through feces or by direct contact. The symptoms of both are similar to those of a normal flu, such as cough, fever, chills, sneezing among others. With regard to treatment, they are also similar namely rest, fluid intake and good personal hygiene.

TITLE: THE PINEAL GLAND

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The Pineal Gland, also known by epiphysis, is a small endocrine gland, whose shape is similar to a pine. It's located on the top part of the 3rd ventricle of the encephalon, more exactly on the epithalamus.

Morphologically, it consists of a lobular parenchyma of pinealocytes. The pineal gland is classified as a gland activated by the presence of serotonin in the human brain, when it's asleep.

It produces, mainly, melatonin, whose action regulates daily body rhythms. This hormone is secreted in major quantities during the night. That means a dark and quiet environment. Normally the melatonin production decreases with the aging process and for that reason it's highly common sleep disturbs in adults and old people. In extreme cases, when there is no segregation, diseases like cancer may appear. When the activation of organism's defense mechanism is required, the melatonin starts being produced by them and not by the pineal gland. Referring to the reproductive system, the melatonin affects the puberty's beginning. In terms of metabolism, this hormone influences the insulin action.

Contrary to the present knowledge, in the past, the pineal gland was classified as a vestigial organ. It was in this gland that, according to some cultures and philosophers beliefs, the soul was and the connection between the intellect and the body was made.

TITLE: ENDOCANNABINOID SYSTEM**Authors:** *Ana Victória, Ana Soares, Daniela Pires, Marta Magalhães, Sara Miranda***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The endocannabinoid system (ECS) is one of the most important physiological systems for the maintenance of human health with an active role in eating behavior and is so called because of the plant that is behind its origin, *Cannabis sativa*. It was early used for stimulating sensations, including appetite, having in its constitution one group of compounds called cannabinoids.

Thus ECS consists of the endocannabinoids ligands- the endocannabinoids- such as anandamide and 2- arachidonoylglycerol; the enzymes which synthesize and degrade these endocannabinoids, the receptors coupled G-protein (family of proteins attached to the cell membrane), and the last but not the least the CB1 and CB2 receptor.

Travelling through the nervous system, we find the CB1 receptor that, when activated by the endocannabinoids, releases certain mediators responsible for the increase in appetite after starving/food starvation periods, thus explaining its hyperactivity in cases of obesity.

The endocannabinoid system takes part of physiologic process, such as the modulation of the endocrine axis mediated by the hypothalamus, nociception, regulation of the motor activity, control of cognitive processes, modulation of inflammatory and immunologic responses, anti-proliferative action in tumor cells, control of the cardiovascular system, etc. Moreover, this system is also able to affect our food habits and the metabolic functions of our organism, inducing us to eat unhealthy food, which will satisfy our needs quicker, but will lead to overweight issues.

TITLE: VITAMIN A

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Vitamin A is a fat-soluble vitamin. This vitamin is a generic term used to describe compounds that exhibit the biologic activity of retinol. The two main components of Vitamin A are retinol and carotenoids.

The vitamins are indispensable micronutrients in several metabolic reactions. Since our organism can't synthesize most vitamins, its daily consumption is necessary through feeding. Some food sources of Vitamin A are fish and fat dairy products, yellow-orange fruits and vegetables. Beta-carotenes are an example of pro-vitamins that can be modified by the organism.

This vitamin is essential for vision because protects the cornea, part of the eye that transmits and concentrates the light that enters in the eye. The lack of this nutrient can lead to difficulties to see in dim light locals, causes ocular modifications, in extreme cases total blindness. Retinol is converted to rhodopsin (photoreceptor pigment) in the retina used to regulate gene expression to form growth hormone. It's also necessary to maintain the integrity and function of skin and mucous cells, repairing the skin epithelium. It contributes to growth, being essential in proliferation and cell division. Furthermore, the vitamin acts in the development and differentiation of the lymphocytes, important in the immune system. Antioxidant action of this vitamin will contribute so it can have a protective effect.

The consequences that can result from Vitamin A deficiency are night blindness, xerophthalmia, infections and skin alteration.

Its exaggerated consumption can have harmful effects, like bone and muscular pain, skin diseases, hair loss and hepatomegaly.

TITLE: PHYSIOLOGY OF OSTEOCLASTS AND OSTEOBLASTS: DEPOSITION AND BONE RESORPTION**Authors: Ana Freire; Maria Peireso; Marisa Gerales; Marta Silva; Rita Santiago****Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The osseous tissue is the main portion of the skeleton. It has the function of supporting soft parts, it is responsible for protecting vital organs, storing bone marrow, among others. The bone is a dynamic structure, constantly renewed, constituted by cells (osteocytes, osteoblasts and osteoclasts), collagen fibres, and osseous matrix, which is impregnated with calcium salts.

The main function of the osteoblasts is synthesizing the organic part of the bone matrix, formed by type I collagen, glycoproteins and proteoglycans. In turn, the osteoclasts participate in the bone remodelling. They have as basic function the bone resorption. When an osteoclast digests bone tissue it's created a region known as "resorption area", whither enzymes are released, dissolving the bone. Osteoblasts expresses RANKL, which binds to its receptor, RANK, on the surface of osteoclasts and their precursors. This regulates the differentiation of precursors into multinucleated osteoclasts, and osteoclast activation and survival, both normally associated with increased bone resorption. OPG is secreted by osteoblasts and osteogenic stromal stem cells, and protects the skeleton from excessive bone resorption by binding to RANKL and preventing it from interacting with RANK.

In fact, on a healthy adult, the homeostasis is maintained by the action between the osteoclasts and the osteoblasts. It's possible to occur the formation of calluses or spores when a large percentage of calcium is deposited. On the other hand, when a lot of calcium is removed, the bones get weaker, causing an alteration of the bone strength (osteoporosis).

TITLE: THE CALCIUM AND VITAMIN D: CALCITONIN AND PTH

Authors: *Adriana Baptista, Ana Catarina Martins, Ana Maria Fernandes, Ana Rita Lucas, Jéssica Quintas, Mariana Duarte.*

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The bones play an important role in regulating blood calcium levels, which are the main calcium storage sites in the human body.

Calcium moves into the bone as the osteoblasts (bone forming cells) build new bone, and out as the osteoclasts (bone resorbing cells) degrade the bone tissue.

The hormones who are responsible for regulating calcium levels in the blood are calcitonin, secreted by the thyroid glands, and PTH (parathyroid), secreted by the parathyroid glands.

The PTH regulates blood calcium levels by indirect stimulation of osteoclast activity, leading to an increase in calcium release into the blood. In the kidney, the PTH increases the reabsorption of calcium in the urine. It also promotes the formation of active vitamin D, which increases the calcium absorption from the small intestine.

Calcitonin plays a minor role in the maintenance of blood calcium levels by inhibiting the activity of osteoclasts.

TITLE: VITAMIN C - IMPLICATIONS IN THE PRODUCTION OF COLLAGEN**Authors:** *Diana Filipe, Carla Longo.***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

Vitamin C or ascorbic acid (AA) is a water soluble molecule present in vegetables and citrus fruits, unable to be synthesized by humans and other primates. Nonetheless, it is essential in the healing and plays a key role in the synthesis of collagen type I and III, Type I collagen, the most copious collagen component in the body, is composed of two $\alpha 1$ chains and one $\alpha 2$ chain. It is found as the major component of the extracellular matrix (ECM) in skin, bones, and tendons and forms the main framework of the ECM, which is the backbone structure of these organs. The structure of type III collagen is characterized by the presence of intrahelical disulfide bonds. Inside the cell, vitamin C is necessary for the hydroxylation of two amino acids, proline and lysine, which leads to the formation of a precursor molecule, Procollagen. Subsequently, on the outside of the cell is converted into collagen procollagen.

Although the proliferative capacity and collagen synthesis is dependent on the age, ascorbic acid has the ability to stimulate cell proliferation and collagen synthesis by dermal fibroblasts regardless of patient's age.

In vitamin C deficiency, unstable fibroblasts produce collagen, which consequently leads to a set of conditions which present with primary and generalized connective tissue changes. Thus, it is important to investigate the relationship between vitamin C in all its implications.

To the research conducted for this paper aims to address thoroughly the implications of vitamin C to produce collagen and present different pathologies derived from the inhibition of collagen production in the body.

TITLE: OXIDATIVE STRESS AND ANTIOXIDANTS

Authors: *Ana Monteiro, Beatriz Curado, Cristiana Lopes, Maria Ávila, Micaela Ângelo, Raquel Martins.*

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In our organism and our surroundings there are constant reactions that can be harmful to our health, therefore there are specific defense mechanisms. In aerobic organisms, free radicals (unstable and reactive molecules) are constantly being produced during the normal cellular function mainly in the form of reactive oxygen species (ROS) and reactive nitrogen species (RNS). Its production is a consequence of cellular respiration and energy production, created by mitochondria. Exposition of the organism to free radicals has led to the development of internal defense mechanisms to eliminate them, and thus the concept of oxidative stress emerged, this is provoked by the imbalance between the production of free radicals and the amount of antioxidant defenses associated to the cell. Naturally there is a tendency for the production of free radicals, however, excesses can oxidize and damage cellular lipids, proteins and DNA, leading to the collapse of the regular function of the organism. In time, this process leads to the appearance of illnesses such as cancer, diabetes, rheumatoid arthritis, lung, cardiovascular, neurological diseases and even premature aging. C and E vitamins and some carotenoids are examples of antioxidants that act as substances capable of inhibiting oxidation and protecting cells, neutralizing free radicals. These substances are present in natural products with antioxidant activity, which may assist the endogenous defense system, such as green tea, red fruits among others. In this perspective, we conclude that the antioxidants present on the diet assume a major importance as possible protector agents reducing oxidative damage.

Keywords: Oxidative stress, antioxidants, free radicals.

TITLE: ENDOTHELIAL DYSFUNCTION AND ATHEROSCLEROSIS

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The endothelial cells are the main constituents of the tunica intima of the blood vessels , being responsible for vascular homeostasis and allowing the blood to flow without coagulating. This balance can be disrupted in the presence of cardiovascular risk factors, such as sedentarism, smoking, diabetes, high blood pressure, high levels of LDL, an imbalanced diet and the reduction of nitric oxide production, responsible for the blood vessels dilatation, in contrast with the increase of endothelin production, responsible for the constriction of blood vessels, making the endothelium more susceptible to injuries and favoring the installation of a degenerative process called endothelial dysfunction and, consequently, the appearance of atherosclerosis.

Atherosclerosis results not only from the deposit of inflammatory cells, the macrophages, which accumulate fat substances, such as “bad” cholesterol, LDL, in the tunica intima of arteries, but can also be caused by oxidative stress, a condition that reduces nitric oxide’s biodisponibility, and who is involved in LDL oxidation, triggering more inflammation, disrupting normal vascular cell functions. All of this is going to contribute to the formation of atherosclerosis plaques, which are going to reduce and hamper the blood flow. The most common symptoms include fatigue, angina, muscle weakness, sudden limb numbness or speaking difficulties. However, these vary according the affected artery.

Depending on the symptoms and the severity of the disease the doctor can either prescribe medication or opt for surgery. The treatment should be complemented by regular physical activity, a balanced diet, avoiding cigarettes and reducing alcohol consumption.

TITLE: ALZHEIMER'S DISEASE – CHOLINESTERASE INHIBITORS

Authors: *Cátia Lopes; Daniela Pires; Lisandra Joaquim; Sara Martins*

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Alzheimer's disease is the most common neurodegenerative disorder associated with age, whose cognitive and neuropsychiatric manifestations result in progressive disability and impairment, whose main symptoms are loss of memory and reasoning.

Years before the appearance of the disease, there is a deposition of β -amyloid peptides in the medial temporal lobe that affects the cholinergic neurotransmission. There is an increase in glial inflammatory and oxidative reactions that cause the formation of neurofibrillary tangles and the conversion of the senile in neurotic plaques. Makes the communication impossible in the brain and damages the connection between cells.

The carriers of the disease have reduced levels of the neurotransmitter acetylcholine important for memory; a way to control the problem is to avoid the small amount of acetylcholine produced to be degraded using cholinesterase inhibitor.

The cholinesterase inhibitors are the main drug used to treat Alzheimer's, they promote the relief of the symptoms of the disease. This inhibitor has the function of increasing the synaptic availability of acetylcholine through the inhibition of enzymes that destroy them when it passes from one cell to another.

Experts recognize that the above-mentioned drugs are not a cure. However, it is clear that these drugs improve the quality of life of some individuals with Alzheimer's disease.

TITLE: PARKINSON'S DISEASE – L-DOPA

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The Parkinson's disease is a chronic progressive neurodegenerative disorder that affects movement, muscle control and balance. Some of the symptoms are tremors, motion and motor impairment and also depression, anxiety and dementia. Parkinson's disease is characterized by a profound and selective loss of nigrostriatal dopaminergic neurons, from the crescent-shaped cell mass known as the *substantia nigra*. Normally, these cells produce dopamine, a neurotransmitter that intervenes in the transmission of messages between the diverse brain areas that control the body movement and mood. So, when the cells of the *substantia nigra* die, the dopamine levels decrease. These cells die because the protein alpha-synuclein isn't properly degraded, which causes the formation of fibrous microscopic deposits in the interior of neurons. Levodopa (L-DOPA) is converted to dopamine by the enzyme dopa-decarboxylase, which exists peripherally and centrally. L-Dopa is combined with a dopa-decarboxylase inhibitor to prevent peripheral effects. Dopamine doesn't pass the blood brain barrier, so it cannot be administered, but levodopa does pass and is rapidly decarboxylated to dopamine by enzymes. The dopamine deficit is so fixed, but indirectly (the whole area is flooded and not just the disabled synapses). Thus, L-DOPA is an amino acid supplement which produce dopamine in the body after oral ingestion, such administration improves the clinical picture, but doesn't halt the death of dopaminergic neurons.

Although the optimal timing of the initiation of levodopa therapy is controversial, some investigators have suggested that early treatment of parkinsonism with levodopa delays disease progression and decreases mortality.

TITLE: PHYSIOLOGY OF DRUG ABUSE AND THE EFFECT ON THE CENTRAL NERVOUS SYSTEM.

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The objective of this work is explain the physiology of drug abuse and the effect on the Central Nervous System (CNS).

Drugs according to the World Health Organization (WHO) are "mix any chemical entity or entities that changes the biological function, and possibly one structure", i.e., any substance that changes the function of living organisms.

Drugs can be classified into: psychoactive drugs, psychotropic and drug abuse. Psychotropic drugs are divided into depressive - decrease the operating speed of the CNS, for example the alcohol; Stimulant drugs - It stimulates the activity of the CNS by increasing the state of "vigilance", for example, cocaine; and disturbing drugs - produce qualitative changes in the functioning of the CNS causing delusions and hallucinations, what happen for example with the administration of cannabis.

Opioids are all the drugs that relieve pain. As an example we have the heroin, because affects nerve transmission inhibiting pain. For this reason, heroin is considered a good analgesic.

The alcohol is considered a depressant drug because it reduces the excitatory action due to inhibition of NMDA receptors of glutamate. This drug also causes a relaxing effect, because this drug will block the action of Ca^{2+} ions during the release of neurotransmitters, limiting the transmission of nerve signals.

Cocaine mainly emphasizes the action of dopamine and noradrenaline. These neurotransmitters are excitatory so the result of the action of cocaine is the stimulation of CNS to produce euphoria and alertness.

Cannabis is an anticholinergic whose active principle is tetrahydrocannabinol (THC). It acts mainly in the inhibition of the sympathetic nervous system, preventing the acetylcholine neurotransmitter release. The effects are, for example, loss of sense of things.

TITLE: DEGENERATIVE RETINAL DISEASES: VEGF INHIBITORS**Authors:** *Carolina Santos; Daniel Silva; Jéssica Moreira; Mariana Casegas; Tatiana Neves***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The retina acts like a film in a camera, receiving and processing all that we see. The retina has photoreceptor cells that convert light into electrical impulses carrying messages to the brain. When these cells degenerate, they lose the ability to transmit images to the brain. There is, then, what we call retinal degenerative diseases (RDD).

Vascular endothelial growth factor (VEGF) is a signal protein produced by cells that stimulates vasculogenesis and angiogenesis. VEGF are substances released by retinal cells damaged by the disease, which are responsible for stimulating the proliferation of new blood vessels - which is undesirable in the retina.

Among these diseases there are some that affect a portion of the retinal tissue responsible for central vision and details of vision, the macula, which is named by macular degeneration, for example, Age-Related Macular Degeneration. Also can be referred others diseases like retinitis pigmentosa, which occurs due to the death of photoreceptor cells.

There are several treatments used but the most effective treatment is using VEGF inhibitors against choroidal neovascularization. Macugen, Lucentis, Eylea and Avastin are the four VEGF-inhibitors currently approved for ocular use, in wide use for macular degeneration. These inhibitors are injected into the eye in a painless treatment, although not able to reach full recovery. VEGF inhibitors allow to control the disease in order to improve the lives of the patients in that most of these keeps the vision.

TITLE: If CORRENT**Authors:** *Bárbara Faro; Joana Teixeira; Marcos Lima; Mário Vintém; Rita Abrantes***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The heart has the ability to rhythmically contract due to intrinsic mechanisms that command and spontaneously generate these contractions. These mechanisms happen due to the performance of the sinus node which generates and controls heart rhythms through electrical stimulation thanks to the membrane depolarization.

We can find in the phase IV, the If current, also known as funny, which is activated by the hyperpolarization of the membrane, enhancing the opening of the channels that allow potassium entry into the intracellular medium and the release of sodium and calcium to the extracellular medium. This influx of cations increases the longer is the difference in potential of the membrane. Thus it is generated slowly and spontaneous depolarization of the membrane, responsible for the automaticity of the sinus node. After repolarization it is reached the threshold for the start of a new action potential, ensuring the cardiac rhythmicity.

So that this current can function it is required the presence of channels for passage of ions in the cell membrane. There are, however, inhibitors that block the If current, for example the ivabradine. This inhibitor works when the channels are open blocking the If current, specifically in the f-channels, called: selective inhibitor of pacemaker If.

Through this blocking it is decreased the rate of depolarization and consequently the heart rate.

TITLE: ARTERIAL HYPERTENSION – BETA BLOCKERS**Authors:** *Carolina Sousa; Fátima Fernandes; Levi Alves; Raquel Ferreira; Regina Freire***Affiliations:** Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.

The arterial hypertension is a cronic disease determined by high levels of blood pressure in the arteries which makes the heart exert a greater effort than normal so that it can make the blood circulate through the blood vessels. The arterial pressure can be quantified in (maximum) systolic, which refers to the period that the cardiac muscle is contracted or (minimum) diastolic when the heart is relaxed.

The main symptoms of this disease are dizziness, nosebleeds and headaches.

For this disease there are two treatments. The non-pharmacological treatment and the pharmacological one. The non-pharmacological treatment consists in the lifestyle changes of the individual and it can result in the decrease of the dosage of the medications. On the other side the pharmacological treatment relies in the utilisation of antihypertensive drugs. These substances can be inhibitors of ACE and antagonists of the receptor AT-1, diuretics, calcium channel blockers and beta blockers. The beta blockers are drugs that block the beta receptors in the organism, which inhibits the effect of certain stress hormones (norepinephrine, epinephrine). These hormones increase the heart frequency and promote peripheral vasoconstriction which normally have a stimulant effect in diverse organs. These blockers are designed to reduce the heart rate, the heart beats slower and the pressure is relieved.

Sometimes the patients feel that treatment with drugs for the hypertension is uncomfortable, since the decrease of arterial pressure can initially cause exhaustion and tiredness to the patient. The drugs therefore should be gradually administered. This way the body has time to slowly adapt.

TITLE: ANGIOTENSIN AND ARTERIAL HYPERTENSION – AT1 INHIBITORS**Authors:** *Carolina Carvalho, Diana Pereira, Diogo Silva, Fábio Santos, Ricardo Simões***Affiliations:** *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal.*

The Angiotensin is present in the Renin-Angiotensin-Aldosterone System (RAS). This system is described as an endocrine axis in which every component of a cascade is produced by a different organ, performing an important function in the regulation of the blood pressure and is also related to its origin and progression. There are two types of RAS, the local and the circulating. In the circulating RAS the angiotensinogen is produced by the liver.

In this system the renin is released by the kidneys, while the angiotensin converting enzyme (ACE) is located in the vascular endothelium of various organs. When the cascade is activated, the angiotensinogen is unfolded to angiotensin I (A I), which lacks vascular action, suffering posteriorly hydrolysis into angiotensin II (A II). The AI and A II that circulate on the blood will connect on specific receptors, the AT1 and AT2, regulating the functions of target organs.

Angiotensin II causes the contraction of the muscular walls and small arteries, increasing the blood pressure, besides, this peptide also triggers the release of the hormone aldosterone by the adrenal glands resulting in the accumulation of salt and excretion of potassium, because sodium promotes the water retention expanding the volume and increase of the arterial pressure.

The blockers of the receptors on angiotensin II are drugs that act on the AT1 receptors, responsible of all the actions known of angiotensin II, including vasoconstriction, liberation of aldosterone and effects on the myocardial and on the vasculature.

TITLE: LOCAL REGULATORS OF VASCULAR TONUS

Authors: *Ana Filipa Gonçalves; Carolina Santos; Fabiana Santos; João Santos; Teresa Alves*

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Vascular tone is a medical term used to describe the diameter and tone of a blood vessel when the vessel is fully dilated. Under normal conditions, all blood vessels experience at least a mild degree of contraction of the smooth muscles of the vessel. These contractions are used to determine vascular tone. When this tone is normal, the blood vessels are considered to be functioning at optimal levels. When these contractions become abnormal, vascular health may become compromised, requiring a medical diagnosis and treatment.

Vasodilation, vasoconstriction, sympathetic and parasympathetic is some mechanisms of changing the vascular tone. The sympathetic can be with vasoconstrictor or vasodilator nerves. The parasympathetic can be with vasodilator nerves, in vessels of special areas.

The lactate, the adenosine and the CO₂ are secreted metabolites during the realization of physical exercise, promoting the vasodilation of the tone. The histamine promotes the intense vasodilation during an allergic reaction, being thought also a substance with regulating activity of the vascular tone. While the thromboxane A₂ and serotonin, they promote the vasoconstriction.

The endothelium has a predominant function in the control of the vascular tone too, which is done through the balance in the substances secretion vasodilator (nitric oxide) and vasoconstrictor (endothelin-1). Besides that, the endothelium has receptors for several regulating substances of the tone, like the insulin, angiotensin II and prostaglandins.

Endocrinous factors are important too: the effects β with vasodilator effects and the effects α (in high doses), nor-adrenalin and adrenal with vasoconstrictor effects.

TITLE: ATTITUDES OF HCPs TOWARDS PATIENT REPORTING IN PORTUGAL**Authors:** *Liliana Rodrigues***Affiliations:** *Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Coimbra, Portugal.*

The reporting of adverse drug reactions (ADR) is fundamental to build useful information on drug safety. Like this, patients and healthcare professionals (HCP) play an important role reporting cases of ADR to the competent authority.

An adverse drug reaction is an appreciably harmful or unpleasant reaction that results from the unintentional use of drugs and occur at the doses normally used in humans for the prophylaxis, diagnosis and treatment of diseases or for the modification of a physiological function. Pharmacovigilance is the science that detects, evaluates, understand and prevent ADR or any drug related problems. It receives reports from different users of drugs and analyzes them in order to prevent, eliminate or minimize the risks of drugs to the patients' health. The National Pharmacovigilance System (NPS) is a mature and well implemented system which objectives are the evaluation of the drug's safety profile and the triggering of actions to reduce the risks of these drugs. This system is in accordance with the European requirements by which patients can notify ADR suspicions directly to the NPS.

The biggest limitation to the NPS is the lack of reports. Therefore, reporting of ADR is fundamental to pharmacovigilance and patient reporting is important to construct useful information on drug safety. In community pharmacies, HCP play an important role in encouraging patients reporting to promote an active pharmacovigilance.

TITLE: STABILITY STUDY OF ORAL SUSPENSION TRIMETHOPRIM, BY SPECTROPHOTOMETRIC UV-VISIBLE**Authors: *Carina Almeida*****Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal.*

Trimethoprim is a synthetic antibacterial agent belonging to a group of compounds known as diaminopyrimidines. This drug is commonly used in paediatric for the treatment of uncomplicated urinary tract infections. Trimethoprim is administered through various routes in case of children the oral route should always be the first choice, as it is less painful and more pleasant by the use of flavours for example. Many drugs exhibit very different pharmacokinetics in children when compared with adults, moreover very few drugs are available on the market which are specifically licensed for the treatment of children.

The aim of this study is to test the stability of oral suspension trimethoprim by UV-Visible spectrophotometry, 2-3 months after preparation under different environmental conditions (temperature, pH and solar radiation). Trimethoprim shows low solubility, which reduces its bioavailability in oral formulations, that is why it is important to find the right solubility profile. As described in the United States Pharmacopeia the hydrochloric acid (0.1N) solution at 37°C can be used as solvent. Previous studies confirmed, as trimethoprim has a basic nature their reaction with acids results in the formation of salts which improves the solubility.

TITLE: KNOWLEDGE AND CONSUMPTION OF VITAMIN SUPPLEMENTS

Authors: *Adriana Ferreira; Elisa Ferreira*

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Vitamins are organic substances essential for the proper functioning of the body that must to be obtained in small quantities from outside sources.

Increasingly, vitamin supplements are sought by the society to maintain their own well-being for to correct poor eating and sedentary habits or to increase the body's resistance to avoid fatigue caused by demanding activities from the physical and psychological point of view to our body.

Vitamins are essential to maintaining good health, but does the community have a good knowledge about the importance of vitamins in our body take? In what situations should they take vitamin supplements but also know what the most suitable? And what are the most used types and frequency of administration? That may have negative implications for our body? It is known by the clinic, the indiscriminate use of vitamin supplements can cause serious problems to the body as well as its deficit. This work aims not only to demonstrate the importance that vitamins assume for the proper functioning of our body, but also to evaluate the knowledge that the current society have about taking other supplements and alert to the benefits but also the risks associated with them.

TITLE: STABILITY STUDY OF CAFFEINE ORAL SOLUTION, BY UV-VIS SPECTROPHOTOMETRY**Authors: *Diana Silva*****Affiliations:** *Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Coimbra, Portugal.*

The pediatric community needs drug formulations adapted to the specific needs of newborns, infants, children, and adolescents, because the impact of developmental changes in drug absorption, distribution, metabolism and excretion which according to the body composition, organ weight and organ function. Also becomes further difficult to find the right dose, since the pediatric community suffers these anatomical and physiological changes quickly.

Caffeine is a drug commonly used in the neonatal intensive care unit. It can be used in intravenous route or in oral suspension and it reaches the blood concentration peak in 2 h after administration. It reduces the frequency of apnea and the need for mechanical ventilation in preterm infants during the first seven days of therapy.

Apnea is defined as cessation of breathing lasting 20 seconds or more or associated with bradycardia, cyanosis, pallor, and marked hypotonia, for which no specific cause can be identified.

Caffeine has also been used to reduce the incidence of bronchopulmonary dysplasia in infants with very low birth-weight.

The Caffeine elimination occurs partially through the hepatic metabolism mainly through the kidneys. So the kidney failure is a critical factor in very preterm neonates whose hepatic metabolism is reduced due to the immaturity of cytochrome P450 in the liver, because the drug half-life is prolonged.

Through the UV-VIS spectrophotometry we hope verify the stability of caffeine oral solution for 2 to 3 months, evaluating the influence of various factors over time.

TITLE: HYDROQUINONE CREAM STABILITY SUBJECT TO DIFFERENT ANTIOXIDANTS**Authors: Ana Luís****Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

The hyperpigmentation is manifested by the appearance of brown spots more or less numerous and extensive caused by excess production of melanin. Often considered unpleasant, these stains can come from various sources such as excessive sun exposure, age, hormonal changes, genetic predisposition, or skin trauma.

Hydroquinone is one of the most prescribed active ingredients in the masterful formulation in cases of hyperpigmentation due to its depigmentation action. This selectively changes the production process of melanin causing the gradual and reversible skin depigmentation via an enzymatic mechanism of inhibition of tyrosinase, the enzyme that converts tyrosine to melanin.

However, hydroquinone is highly susceptible to oxidation causing organoleptic, physical and chemical changes of the formulations. These changes are caused by factors such as exposure to light, the influence of temperature, presence of oxygen, trace metals and pH of the medium, determining therapeutic failure and possible adverse reactions caused by oxidation products. To avoid these problems the stability of the formulations is maintained by incorporation of antioxidants.

TITLE: KALANCHOE PINNATA - STUDY OF THE PLANT AND ITS PHARMACOLOGICAL AND THERAPEUTIC PROPERTIES**Authors: João Coelho****Affiliations:** *Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Coimbra, Portugal, Thomas More – Campus Geel, Belgium.*

Introduction: Medicinal plants such as Kalanchoe Pinnata have been known for millennia and are highly used for the treatment and prevention of diseases because of their high source of therapeutic agents. This plant leaf and stem and leaf portions contains significant chemicals which are most needed in medicinal industry.

Kalanchoe Pinnata is rich in alkaloids, triterpens, glycosides, flavonoids, steroids and lipids. This chemical constituents of the plant were responsible for the antinociceptive, antiinflammatory and antidiabetic properties.

Objectives: Research the existing knowledge of the Kalanchoe Pinnata and understand the pharmacological effects as well as therapeutic applications that this plant can bring.

Material and methods: A literature research was conducted in several database's as Pubmed, Research Gate and Science Alert to identify English-language articles reporting the study of the Kalanchoe Pinnata well as the importance of the pharmacological effects from the plant and his therapeutic properties, with keywords: *Kalanchoe Pinnata, Pharmacological - Kalanchoe Pinnata and Therapeutic properties from Kalanchoe Pinnata.*

Results: In this review I observed that Kalanchoe Pinnata can bring huge benefits to the treatment of many diseases as well as bacterial infections, depressions and ulcers. Pharmacological effects such as anthelmintic, immunosuppressive, wound healing, hepatoprotective, antipyretic, anti-inflammatory and others contribute to the therapeutical effects.

Conclusion: The plants are well known and have possible source of curing ailments from time immemorial. Pharmacological potentials of Kalanchoe Pinnata are very valuable to understand the therapeutical issues associated to this plant. However, clinical trials are not yet very explored by researchers to understand deeply his activity.

TITLE: KNOWLEDGE ASSESSMENT IN FOOD-PRODUCT INTERACTION IN HEALTH PROFESSIONALS ASSOCIATION AND STUDY WITH HEALTH LITERACY**Authors: *Cátia Costa; Joana Dias*****Affiliations: *Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Pharmacy, Portugal.***

The food-drug interaction by definition is a kinetic or dynamic alteration of these elements in the body, thereby sacrificing the nutritional status of the patient or the therapeutic response to a given drug dose. This interaction is a fairly frequent phenomenon although still very undervalued in our society.

The fact of the mouth prove favourite for the administration of medicines due to their convenience and safety means that the food-drug interactions are facilitated when the passage of these through the gastrointestinal tract.

The foods may influence the effect of drugs in the body primarily by interfering with the pharmacokinetics, i.e., the absorption, distribution, metabolism and excretion and its pharmacodynamics influencing the response intensity of drug, enhancing or reducing the desired therapeutic effect .

In turn, there are also drugs that may alter the absorption of nutrients such as antibiotics, antacids and laxatives, thus causing a change in the nutritional status of the patient.

A literature search in online databases, including PubMed and Google Scholar regarding the occurrence of interactions was performed using the key words: *drug-food interaction, role of health and health literacy professional.*

However, it is for health professionals to alert users to the possible adverse reactions and to identify the cause and the effect of interaction caused using the health literacy giving them knowledge and skills to do so.

In short, through this research, it was found that knowledge of these interactions has several limitations essentially the level of your knowledge by health professionals with health literacy.

TITLE: LYMPHOMA DIFFUSE LARGE B CELL, WHICH TREATMENT OPTIONS?

Authors: *Mariana Carvalho*

Affiliations: *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Pharmacy, Coimbra, Portugal*

Background: The diffuse lymphoma of large cells type B, also known as DLBCL, is one of the subtypes more usual and more aggressive of the non-hodgkin lymphoma in all countries and in all age group.

Objective: The aim of our study is review the available treatment for the diffused lymphoma of large cells type B and research new treatments to apply in future.

Material and Methods: In this review study, Pubmed database was searched for relevant publications not only about diffuse large B cell lymphoma, but also a therapeutic for this disease, with keywords: *lymphoma and therapeutic*.

Results: The current therapy for DLBCL is designated as R-CHOP (Rituximab, Cyclophosphamide, Doxorubicin Hydrochloride, Vincristine Sulfate and Prednisone), the Rituximab has been addicted later. This treatment allows that many patient can reach the cure. This new therapy has increased the lifetime of the patients, however it has a failure rate in the treatment of 40% of the patients. At this work will review the available treatment and the scientific evolution of new treatments to fight this disease.

Conclusion: In conclusion, the addition of Rituximab to systemic chemotherapy has improved the response rate and the survival rate of the patients with diffused lymphoma of large cells type B. There are new techniques in study, the improvement in genetics studies and the identification of new biomarkers can bring a new therapeutic approach, including new factors to the current treatment procedure in a near future.

TITLE: NEW THERAPEUTIC SYSTEMS: *DRUG DELIVERY SYSTEMS (DDS)***Authors: *Andreia Figueiredo*****Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Pharmacy, Coimbra, Portugal.*

Assumed the problems inherent in the administration of drugs it has become essential to develop new therapeutic systems able to overtake existing barriers, ensuring greater safety in the administration of therapeutic substances, as well decreasing the possible side effects. Then come the controlled delivery systems of drugs (DDS).

A drug delivery system is a technology designed with the objective of introducing a therapeutic substance in the body and improves its efficacy and safety by controlling the rate, time, and place of release of drugs in the body.

This technology introduction of a drug at its site of action brings great advantages when compared to existing systems, due to the reduction of the dose and side effects. These systems are quite promising in that permit the development of new therapies for various diseases, leading to new therapeutic alternatives.

New nanotechnology therapeutic systems (nanoparticles, liposomes), cyclodextrins and microemulsions are some examples of controlled drug delivery systems, which have demonstrated promising capabilities in this area, from a medical and pharmacist point of view.

This work summarizes the main characteristics of some of the drug delivery systems, noting that its objectives, how to act, as well as advantages and disadvantages of them.

TITLE: PARACETAMOL DOSING AT SEVERAL COMMERCIAL MARKS AND GENERIC UV-VISIBLE SPECTROSCOPY**Authors:** *Jéssica Guerreiro***Affiliations:** Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal

The Paracetamol (para-acetyl-aminophenol) or acetaminophen (N-acetyl-para-aminophenol) is a white crystalline powder, lightly soluble in water but readily soluble in alcohol and very little soluble in methylene chloride. It exists in different dosages and pharmaceutical forms and can become hepatotoxic in cases of overdose. One of the most used and marketed analgesics and antipyretics, however weak anti-inflammatory properties. Its mechanism of action is not fully understood, but there is a blockage of the arachidonic acid cascade, inhibiting the synthesis of prostaglandins responsible for the manifestations of inflammation.

Currently on the market there are several commercial marks (Benuron®, Panadol® and Supofen®) and generic paracetamol, so it is useful to quantify and compare their measurements using analytical methods - Spectroscopy UV-Visible. This method was validated through the detection and quantification limit parameters, linearity, accuracy and precision; and using a spectrophotometer to quantify the concentration of a species in solution in the UV-visible zone through the variation of absorbance versus concentration graph of various standard solutions.

Our objectives are: to quantify the dose of 500mg paracetamol tablets in several commercial and generic by UV-Visible Spectroscopy as an analytical method; prove the drug Quality Control; to inform the society the several commercial and generic of acetaminophen; and alert it to the hepatotoxic effects of overdose.

After completion of the experimental analysis are expected to, by reading the absorption spectrum of the various samples, the amount of paracetamol present in them is true regardless of whether the drug has to be generic or commercial mark.

TITLE: PERCEPTION OF RISK OF ADVERSE DRUG REACTIONS BY HEALTH UNDERGRADUATE STUDENTS – INFLUENCE OF INITIAL EDUCATION.

Authors: *Iris Carvalho*

Affiliations: *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal.*

Objective: To assess the level of risk perception of adverse drug reactions using a questionnaire and an visual analogue scale (VAS).

Background:

Adverse drug reactions (ADRs) are global problems of major concern. Spontaneous ADR reporting is the cornerstone of pharmacovigilance.

Healthcare professionals (HCP) are fundamental in drug safety, being in a privileged position to collect and manage data on the safety of medicines. However, most of them, underreporting adverse drug reactions (ADR). One of the reasons presented by HCP is the uncertainty to recognize a suspected ADR. A low and weak risk perception can be one of the reasons to explain these underreporting and this could be also linked with the initial poor education plans regarding Pharmacovigilance.

TITLE: PROFILE OF MEDICINES MANAGEMENT AND WASTE IN CARE HOMES**Authors: Joana Louro****Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal.*

According to the report Evaluation of the Scale, Causes and Costs of Waste Medicines (School of Pharmacy, University of London, 2010), prescribing and medicines' management in care homes are the potential source of medicines wastage. In a certain way due to the high drug use associated with the complex needs of many residents, who may have multiple progressive illnesses and were subjected to polypharmacy. It is this context that the stock of medication errors arise, associated with poor management by care homes and the use of noncomputerized systems.

Currently there is limited literature on the subject of control and Stock management of medications in care homes in Portugal, so it is beneficial to carry out this study, using a prospective analysis of the levels of stock in care homes. Waste medicines could also be assessed by recording the amount of medicines returned each month. This would provide insight into stock management, and highlight any issues with stock or waste medicines.

The European Waste Framework Directive (2008) defines 'waste' as being 'any substance or object the holder discards, intends to discard or is required to discard'. In this sense and with regard to medicinal products it refers to items which are exempted but only partially used or not used at all by patients and eventually need to be eliminated, since they are no longer needed or because they are expired.

Thus all care settings should have a written policy for the safe disposal of surplus, unwanted or expired medicines.

TITLE: STATE OF THE ART OF ORAL HORMONAL CONTRACEPTION

Authors: *Carlos Silvestre; Diana Santos*

Affiliations: *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal.*

The oral hormonal contraception is widely used from the Portuguese women as sexual contraception.

The introduction of generic drugs in Portugal (DL 72/91, revoked by DL176/2006), and fall of several patents, allowed start the production and selling of generic birth control pills concurrently with its reference counterpart.

The generic drugs, by definition are “drug with the same qualitative and quantitative composition of actives substances and the same pharmaceutical form and whose bioequivalence with the reference product there been demonstrated by appropriated bioavailability studies”.

The problematic in study gird up to the finding, or not, significant differences in dose (in different active substances), and on which groups (reference *versus* generic drugs) women feel more confident and establishing a relationship between the quantitative analysis of active substances with women’s choice as the final consumer.

TITLE: STUDY OF THE BENZODIAZEPINES (BZD) MISUSE AT A COMMUNITY LEVEL – A REVIEW

Authors: *Rita Pereira*

Affiliations: *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal.*

Introduction: The Benzodiazepines (BZDs) are drugs with anxiolytic activity that began to be used in the 60's. According to data published in 2013, the central nervous system drugs are the second pharmacotherapeutic group with more sales.

Generally, BZD have low toxicity but its prolonged use exceeding periods of 4 to 6 weeks, can lead to the development of tolerance, addiction and withdrawal syndrome.

Objective: Analyze the prevalence of the consumption of BZD and understand the level of dependence of the population.

Material and methods: Bibliographic review through online search in Google Scholar and Pubmed data through the following keywords: Benzodiazepines, Prevalence, Dependence, Abuse.

Results: Analysis of obtained articles shown that a total of 129 (36%) patients reported current use of BZD. Of these, 58 (45%) continued the use of BZD on their own. Among the users, the majority (n=31; 24%) were using BZD on a daily bases and reported insomnia and anxiety as reasons for its use. It was also concluded that tolerance and / or progressive increase of the dose was mentioned by several respondents, professionals and users.

In a study realized in England and Wales, it was found that there are 12 million BZD prescriptions issued per year, 1.5 million people addicted in the UK (mostly prescribed by qualified doctors) and estimated 0.2 million illicit BZD users.

Conclusion: Many studies have shown that BZD are being used indiscriminately. It is necessary to conduct more studies in this area in order to understand the problems associated with BZD misuse.

TITLE: STUDY OF THE DEGRADATION OF AN ORAL SOLUTION OF AMOXICILLIN, BY UV-VISIBLE SPECTROSCOPY**Authors: *Pedro Loureiro.*****Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Amoxicillin is a drug derivate of penicillin, belonging to anti-infective, anti-bacterial drugs. It's a semi-synthetic molecule developed in order to increase anti-microbial spectrum. This compound is one of the most important beta-lactam, because it acts both in gram positive and gram negative bacteria. The pharmacokinetic and pharmacodynamics properties indicate that there is an increased absorption when orally administered because is more resistant in gastric tract. It is the most used beta-lactam antibiotics in human medicine.

There are many amoxicillin pharmaceutical forms in market such as pills, capsules and powders for the extemporaneous preparation of oral suspension. The reconstitution of the powder is made with a solvent, after dilution the solution should be stored at a temperature below 25 ° C for 14 days. Is advantageous to create various pharmaceutical forms when there are difficulties in swallowing solid oral forms, like Pediatrics.

The stability and degradation of liquid formulations are important factors to evaluate and ensure effectiveness, quality and safety of the drug. According to some studies, there are factors which influence the degradation of the molecule, such as temperature, humidity, their own chemical properties and the presence of oxidants in solution.

This study aims to determine the stability and degradation of an oral solution of amoxicillin, under specific conditions, through UV-Visible spectrophotometry, because of the simplicity and accessibility of the method.

TITLE: SURFACE CONTAMINATION OF ANTINEOPLASTIC DUE TO WORKING PROCEDURES**Authors:** *David Almeida***Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal.*

Background: Several studies show that occupational exposure to antineoplastic (cytotoxic) drugs can result in adverse health outcomes including genetic damage, which could lead to cancer. It is then essential create and establishing guidelines that ensuring the safety of professionals.

Objective: The aim of our study is to evaluate the level of contamination of antineoplastic in a working surface through the adequate chemical analysis.

Methodology: In this review study, Pubmed database was searched for relevant English publications warning the impact of the exposure that healthcare professionals are subject during the preparation of anticancer drugs, with keywords: *antineoplastic drugs, exposure, contamination and working practices.*

Results: Were found articles referring the surface contamination isn't related only with correct working practices but also to the using of proper devices, like the adoption of the Luer-Lock devices that can avoid the spillage of the drug and the use of good quality gloves, like nitrile gloves which present the highest resistance levels to the cytotoxic drugs. The frequency of cleaning the surface with adequate detergents by using sodium hypochlorite solutions, instead of polyphenols or generic detergents, which are used for floor cleaning, as they are for the workbenches. It's important to design control measures through periodical analyses to verify the efficacy of the preventive and protective measures adopted.

Conclusion: It is expected to conclude that the implementation of working practices guidelines and control measures can reduce professional exposure to antineoplastic drugs preventing health hazards, as well as the levels of contamination of the drugs.

**TITLE: THE IMPACT OF MEDICATION ON THE QUALITY OF LIFE OF DIABETIC PATIENTS
– A REVIEW****Authors:** *Andreia Pestana***Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Introduction: The type 2 diabetes mellitus is a chronic disease with high social and economic burden. It is often associated with decreased quality of life. Polypharmacy is the natural consequence of providing evidence-based medical care to patients with type 2 diabetes.

Objective: Analyze the quality of life of patients with type 2 diabetes, and the consequences of the polypharmacy in this patients.

Material and methods: A search review was conducted using Scholar Google and Medline online databases. Data were extracted through the following keywords: “*type 2 diabetes mellitus*”, “*Quality of life and type 2 diabetes*” and “*Polypharmacy and type 2 diabetes*”.

Results: The better glycemic control is associated with better the quality of life in patients. There was no association between quality of life and treatment adherence behavior. However, the combination of strong knowledge and a positive attitude was associated to a good quality of life. According to a study, patients were taking a mean of 4.1 diabetes-related medicines. Total number of medicines prescribed was not correlated with medication adherence. Adherence was significantly lower for medicines not felt to be improving current or future health. Among patients on three or more medicines, 71% with suboptimal adherence were perfectly adherent with all but one medicine.

Conclusion: The results suggest that it is important to change negative attitudes to treatment adherence in type 2 diabetic patients, which can help improve the quality of life of these patients. In this sample, patients reported very high medication adherence rates regardless of number of medicines prescribed.

TITLE: TREATMENT OF GIARDIASIS - DRUGS AND RESISTANCE**Authors:** *Bruno Matias; Jorge Balteiro***Affiliations:** Polytechnic Institute of Coimbra, ESTeSC - Coimbra Health School, Pharmacy, Coimbra, Portugal

Background: *Giardia lamblia* is the causative agent of giardiasis, one of the most common protozoan parasitic infections of intestinal tract. *Giardia* infects approximately 2% of the adults and 8% of the children in developed countries, being responsible for the largest number of waterborne outbreaks of diarrhea in the United States. The symptoms commonly referred are diarrhea, nausea, and malabsorption.

Objective: This review study will aim to gather the current information of drugs used and their resistance mechanisms in *Giardia lamblia*.

Material and Methods: In this review study, Pubmed database was searched for relevant publications related to the treatment of giardiasis, information about the drugs used and the resistance mechanisms in *Giardia lamblia* with the keywords: *Giardiasis, Giardia lamblia, Treatment, Metronidazole*.

Results: The most common antibiotics used in giardiasis are the 5-Nitroimidazoles, like metronidazole, tinidazole, secnidazole and ornidazole. Other anti-giardial drugs are: quinacrine, furazolidone, benzimidazoles (albendazole and mebendazole), paromomycin, bacitracin, chloroquine and nitazoxanide. In most of cases metronidazole has recurrence rates about 90 percent once that it is a good cost-effective drug, although the prevalence of clinical metronidazole resistance may be now at 20 percent.

Conclusion: Non-antibiotic treatments should be the first-line approach because of the increased risk of side effects and the possible emergence of resistant organisms to metronidazole, tinidazole, or benzimidazole. It cannot be denied that drug resistance occurs in *Giardia lamblia*, becoming a matter of concern due to the frequent occurrence of this parasite. However, promising novel treatment options have been presented recently, such as formononetin, auranofin and fumagillin.

TITLE: MEDICATION USE - PREVALENCE AND INDIVIDUAL DETERMINANTS**Authors: Vera Saraiva****Affiliations:** *Polytechnic Institute of Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Actually there is a high consumption of medication which are responsible, in part, by an increase in quality and average life expectancy in the population. However, its irrational use has consequences (adverse effects, economic effects) leading to an increased interest in evaluating why the use of drugs and the factors leading to its consumption by the population.

The way how drugs are used in a population is a general indicator of the health of the same, allowing to identify the main pathologies, determine their prevalence and know how the population uses the therapeutic resources; this use is a social process, dependent on various factors like the pharmacological, cultural and behavioral. In addition to these factors, there are also individual determinants such as age, sex, self-perceived health status and other factors like economic, social and demographic that leading to a greater or lesser use of drugs.

So the drug utilization studies enable us to relate the consumption of drugs and determining the factors described above and how these influence the type of medication chosen by each individual.